



ESTABLISHED 1859.

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THIS JOURNAL is regularly supplied by subscription to the whole of the Members of FOURTEEN PHARMACEUTICAL SOCIETIES in the British Empire

In our recently re-arranged offices we have made provision of a floor with desks, works of reference, and a file of THE CHEMIST AND DRUGGIST for the convenience of subscribers to this journal, especially for those resident abroad or in the provinces when they may be visiting London on business.

Catalogues and price-lists issued by houses connected with the drug-trade are kept on file, and may be consulted; and we also suggest that this provision may be useful to employers who may wish for a central place to meet assistants whom they wish to see before engaging. We have also a room capable of accommodating twenty or thirty persons which we shall be glad to lend free for suitable trade-meetings; but we shall be obliged if subscribers who wish to avail themselves of the latter offer will advise the Publisher in advance. The Catalogues can be consulted any day from 10 A.M. to 4 P.M., and on Saturdays up till 12.30.

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Summary.

THIS is the record number of the *C. & D.*
MORE advertisements, more insets, more literary pages.

QUININE is cheaper by 2d. per oz. this week (p. 236).

THE NOVELTY SECTION is rich in good things (p. 241).

SOME GOOD PILL-EXCIPIENTS are mentioned on p. 244.

A DIGEST OF THE INSETS in this issue commences on p. 162.

THE LATEST MINOR AND MAJOR MEN are named on p. 155.

THE "MADAME FRAIN" people have been acquitted (p. 145).

OUR TOWN TRAVELLER has a rather varied record in this number (p. 179).

A CAMERA in which plates are developed without removing them is figured on p. 244.

IN ADVERTISING IDEAS a chemist tells his *confrères* how to run a local magazine (p. 190).

MR. A. E. SHORTER has given us some information about soap-making in India (p. 188).

A GOOD SPECIALITY can be extracted from the article on cinchona-wine (p. 186).

THE OPIUM-MARKET needs close watching, as the special article on p. 171 indicates.

PROFESSOR DEWAR is annoyed by a foreigner, who is now in the hands of the police (p. 146).

THE PARIS EXHIBITION next year will be attractive. See the advance information on p. 159.

IRISH PHARMACY was the subject of Mr. Payne's address at Plymouth. It is summarised on p. 168.

DISINFECTANTS AND SHEEP-DIPS have been examined by the Cape analyst. His results are printed on p. 167.

THE GOVERNMENT CHEMIST's way of testing wood-naphtha for making methylated spirit is described on p. 158.

THE EDINBURGH SUGGESTIONS are uncompromisingly condemned by Mr. James Reid in a letter on p. 239.

"DOLLY" BLUE has provided the Master of the Rolls with the text for good reasoning ancient trade-marks (p. 152).

THE FIRST WOMAN PHARMACIST to start in business in Paris has been interviewed by our correspondent there (p. 178).

THE SALE OF FOOD AND DRUGS BILL is now on its way to the Lords (p. 150). We comment upon the Commons' debate (p. 170).

AN INTERNATIONAL PHARMACEUTICAL CONGRESS OFFICIAL has given our Paris correspondent exclusive information about it (p. 161).

A NEW CAPE PHARMACY BILL is referred to on p. 172. It deals with poisonous proprietary medicines amongst other things.

ALCHEMY AS IT IS PAINTED is a subject on which Mr. F. C. Tilney writes with authority, famous pictures illustrating his article (p. 175).

THE COMPANIES BILL has passed the House of Lords, but, as reported last week, is not to be taken by the Commons this Session (p. 150).

THE ADULTERATION CASES reported this week deal with camphorated oil, seidlitz-powders, magnesia, white pepper, and compound liquorice powder (p. 153).

MR. E. M. HOLMES, Curator of the Pharmaceutical Museums, is the new President of the Pharmaceutical Conference, which will meet in London next year (p. 234).

SPANISH PHARMACY is the subject of an interesting article by a recent visitor to Spain, who tells all about student life, official analysis, and pharmaceutical practice (p. 182).

OUR CONFERENCE REPORT begins on p. 192 with Plymouth particulars and portraits; the Presidential address and portrait of Mr. Payne on p. 197; the Conference communications are printed on pp. 201-221; and the proceedings report begins on p. 223. There are half a hundred illustrations in the report.

THERE ARE SCORES OF THINGS in this number which we have not space to summarise. A fairly full index of the contents is given in the previous column. There are pictures, poetry, humour, and useful information in this Summer Number, and all the news of the trade received up to Wednesday. Anything of importance which may come to hand on Thursday will be found in the Situations Supplement.

Students' Corner.

CONDUCTED BY RICHARD J. MOSS, F.I.C., F.C.S.

REPORTS.

THE powder distributed for analysis last month contained 8 parts of zinc sulphate, 1 of mercuric chloride, and 1 of anhydrous copper sulphate.

The calculated composition of such a mixture is—

Hg	7.38
Cu	3.98
Zn	18.12
SO ₄	32.78
Cl	2.62
H ₂ O	35.12
	100.00

A trace of iron and slight traces of calcium and magnesium were present as impurities.

Packets of the mixture were issued to fifty-six correspondents, and, in reply, twenty-five reports of analysis were received. Copper and the sulphuric radicle were detected by all our correspondents, while only two failed to detect zinc, and one was unsuccessful in the case of chlorine. There were, however, seven failures in the detection of mercury.

When freshly prepared the powder was white, but before the packets reached their destinations the copper sulphate had absorbed moisture and acquired the blue colour of the crystallised salt.

Last February a somewhat similar mixture was sent out for analysis, and in our issue of March 18 we pointed out the ease with which the mercury could be detected by carefully conducting a test which should never be omitted in the preliminary examination of an unknown solid. We refer to heating a portion of the solid in a bulb-tube. It was shown that, operating upon so small a quantity as 5 milligrammes, it was possible to obtain a sublimate which was found to be slowly soluble in water, giving a black precipitate with sulphuretted hydrogen, and a red precipitate, soluble in excess, with potassium iodide. Clearly this sublimate contained mercury.

The detection of mercury in the preliminary examination was important, because later on, in the course of the analysis in the wet way, it was necessary to treat the precipitate produced by sulphuretted hydrogen with solvents, with a view to the removal of certain sulphides. Yellow ammonium sulphide is generally used to dissolve the sulphides of arsenic, antimony, and tin, but if copper is present it is better to use sodium sulphide, because copper sulphide is insoluble in this salt, whereas the ammonium salt dissolves it appreciably. In the presence of mercury, however, sodium sulphide cannot be used, because mercuric sulphide is dissolved by it. In this case it is better to submit to the inconvenience caused by the slight solubility of copper sulphide in ammonium sulphide, rather than incur the greater inconvenience that would arise if mercuric sulphide were not completely separated from the sulphides of the arsenic group.

PRIZES.

The First Prize for the best analysis has been awarded to E. M. LEESE, c/o E. H. Hasselby, Esq., Eversfield Place, Warrior Street, St. Leonards-on-Sea.

The Second Prize has been awarded to

JAMES R. STOTT, c/o Mr. W. Murray Maxton, chemist, Kelso, N.B.

MARKS AWARDED FOR ANALYSES.

E. M. Leese (1st prize) ...	100	Turps	90
James R. Stott (2nd prize) ...	99	H. R.	85
Atropia	98	J. W. Patterson	83
Algol	97	Conatus	81
Aberthaw	96	Oleum	80
Sepia	95	J. W. T.	80
E. H. H.	95	Epoc	78
Spes	94	A. C.	77
Kerlachan	93	Spero	76
Musichemist	93	T. W.	75
E. T. Q.	92	Thomas Yates	70
Hydrargyrum	92	G. H. P.	25
Euclid	91		

TO CORRESPONDENTS.

Prizes.—The students to whom prizes are awarded are requested to write at once to the Publisher, naming the book they select, and stating how they wish it forwarded.

Any scientific book that is published at a price not greatly exceeding half a guinea may be taken as a first prize.

Any scientific book which is sold for about five shillings may be taken as a second prize.

Note.—All communications should include the names and addresses of the writers.

H. R.—Though you believed you had obtained the reactions of a nitrate by three distinct tests there was no trace of a nitrate in the powder; you must have added nitric acid accidentally, or the coloured ring with the ferrous-sulphate test, the red colour with phenol and sulphuric acid, and the red fumes with copper and sulphuric acid must have been imaginary.

J. W. PATTERSON.—The precipitate you obtained with platinic chloride could not have been potassio-platinic chloride: it was probably the corresponding ammonium compound that so closely resembles it. When the analysis was carefully carried out there was no appreciable residue left on evaporating the solution to which the group-reagents had been added, and completely expelling ammoniacal salts by ignition.

CONATUS.—The yellow silver precipitate to which you refer was not due to arsenious acid: a basic mercuric sulphate, precipitated along with silver chloride, was the cause of the yellow colour.

OLEUM.—Your conclusion that no sublimate was produced on heating the powder in a dry tube was too hastily formed; perhaps you allowed the water that condensed on the sides of the tube to interfere with the observation. By using a tube with a slight bulb on the end and inclining it properly, it is possible to keep the water that condenses clear of any solid that sublimes. The precipitate you obtained with platinic chloride must have been the ammonium salt. (See remarks to J. W. Patterson.) When a solution is evaporated to dryness some of the solid may creep up the sides of the dish, and when more strongly heated with the view of volatilising ammonium salts, parts of the dish may not be sufficiently heated to effect this object. The mixture of ammonium salts obtained in the course of an analysis is particularly liable to this creeping action.

J. W. T.—Referring to the production of a sublimate, when the powder was heated in a bulb-tube you inferred "the presence of a volatile substance such as mercury, zinc, &c." Salts of zinc are not volatile at blowpipe temperatures. When heated with reducing-agents, such as carbon, salts of zinc are reduced, the metallic zinc set free volatilises if the temperature is high enough, the vapour of the metal coming in contact with free oxygen is again oxidised, and the oxide is deposited on the nearest surface. It is in this way that the coating of zinc oxide is produced when a zinc salt is ignited on charcoal. The temperature at which zinc is volatilised, at ordinary pressures, is about 930° C.—almost a white heat. Mercury boils at a much lower temperature—viz., 360°—while mercuric chloride boils at a still lower temperature—viz., 295°. When you observed the sublimate forming, the temperature of the powder must have been close to the latter point.

EPCC.—When heating the powder in a bulb-tube you should have observed the sublimate that was produced. It was easy to ascertain by means of simple tests that this sublimate was a mercurial compound. If you found the black sulphuretted-hydrogen precipitate completely soluble in nitric acid, the only explanation we can suggest is that hydrochloric acid was present also. You could not have dissolved the mercuric sulphide in nitric acid alone, but nitrohydrochloric acid decomposes it readily.

A. C.—If an acetate had been present dilute sulphuric acid in the cold would have completely liberated it, so that the solution would smell of acetic acid without being warmed. The solution to which you added ferric chloride was probably alkaline in reality, though it gave a neutral reaction with litmus. Unless

you neutralised the solution near its boiling-point the presence of carbonic acid would mislead when litmus was used as an indicator. On adding ferric chloride to an alkaline solution red ferric hydroxide would be produced, and the change of colour might be mistaken for the effect produced by an acetate.

SPEER.—You should have tested the sublimate instead of speculating as to what it might be. By cutting the tube it was possible to separate the sublimate from the fixed residue, and by observing the effects of sulphuretted hydrogen and potassium iodide on different parts of the sublimate it was easily ascertained that it contained mercury.

T. W.—In a number of cases you record the results of your experiments as “nil.” It would be better to state exactly what you observed. When you heated the powder on charcoal with cobalt nitrate your result was “nil.” You must have obtained a nearly black mass. The powder alone, heated on charcoal, partially fused in water of crystallisation, white fumes were evolved, the mass became yellowish, but on allowing it to cool it was white. On continuing the heating a yellow deposit was observed on the charcoal around the ignited mass; this deposit was also white on cooling. Finally, a dark-brown, nearly black, infusible residue remained. While these changes were taking place, the flame was coloured bluish-green. All these significant facts you describe as “nil.” Of course, it was useless to apply the cobalt test to a substance which became nearly black when heated. The test is one of very limited application; it is useful chiefly as a confirmatory test in identifying infusible white oxides, such as those of the alkali earth-metals, zinc and aluminium.

THOMAS YATES.—The precipitate you mistook for aluminium hydroxide consisted of zinc hydroxide; if you had used enough ammonia it would have dissolved. You should aim at a separation of the metals rather than the detection of them in presence of one another. By treating the sulphuretted-hydrogen precipitate with nitric acid the copper and mercury were completely separated, so that each could be identified without the risk of other substances interfering with the tests.

G. H. P.—Your report merely states the final result of your analysis: you should have given an account of your work, stating what you did with the powder, what you observed, and what inference you drew from each observation.

MUSICHEMIST.—The solution you prepared by boiling the powder with sodium carbonate did not contain mercury: the object of this treatment was to remove mercury and other heavy metals. Mercury being absent, the precipitate obtained with silver nitrate consisted of silver chloride alone. The yellow precipitate referred to last March was due to a basic mercuric sulphate being precipitated along with silver chloride.

English News.

Local newspapers containing marked items of news interesting to the trade are always welcomed by the Editor.

Embezzlement by a Postmaster.

At the Guildford Assizes on July 21, John Hutchinson Wood, described as a chemist (not on the register), and late sub-postmaster at Croydon, was sentenced to twelve months' imprisonment for embezzling three sums amounting altogether to 8*l.* 13*s.*, which had been paid into the Post Office Savings Bank. The defence was that Wood had been careless, and had no fraudulent intention. A petition in his favour was presented by a number of the inhabitants of Croydon, but the Judge said he could not accept it.

“Dr.” Maguth Committed.

Stephen Shepherd Maguth again appeared at South-West London Police Court charged with the manslaughter of a child by not applying a competent amount of knowledge and skill in his treatment of the child. The accused gave evidence on his own behalf, and said he was a B.A. and LL.D. of Cambridge, and had held several curacies, chiefly in the East-end of London. He had made a study of medical botany, and for three years studied at the London Hospital, passing a Preliminary examination at the Royal College of Surgeons. He prescribed spasmodic drops and embrocation. He was questioned minutely as to his knowledge of diphtheria and its treatment. He replied, and described the composition of his remedies. After further evidence had been heard, prisoner was committed for trial.

The “Madame Frain” Case.

Two further hearings of this case (July 20 and 21) have resulted in the discharge of the defendants. At the first of these Dr. Arthur Luff, physician and lecturer on medical jurisprudence at St. Mary's, gave evidence at considerable length as to the constituent parts of the mixtures and pills sold by defendants. The witness said the mixtures contained nothing in the way of an abortifacient, although one of the drugs was popularly supposed to have that property. The pills contained a drug which was dangerous to women under certain conditions, and particularly if taken in excess. The witness said the contents of the bottle which was sold at 11*s.* were worth about 7½*d.* without the Government stamp. A long argument took place on the admissibility of this evidence, which was eventually ruled out. At the second hearing evidence was given by a witness who had formerly been employed at “Madame Frain's” shop as general factotum. He said the business was that of a herbalist; tonics, liver pills, cough-mixtures, sarsaparilla, and other things were sold. After the case for the prosecution had been closed, the Magistrate (Mr. Cluer) expressed the opinion that on the fact that the mixtures were not “noxious” or poisonous he ought not to send the defendants for trial, and ordered their discharge. Mr. Muir, for the prosecution, applied under the Vexatious Indictments Act for Chief-Inspector Hare to be bound over to prosecute at the Old Bailey. This course was adopted, and the defendants discharged.

Wholesale Poisoning of School-children.

On Saturday last week, within half an hour after partaking of a meal of milk, cake, scones, and cherries, between eighty and ninety children of the West Greenwich Ragged School and Working Lads' Institute were prostrated with attacks of vomiting and colic pains, and the general symptoms of poisoning. The children were members of the infant class, and were enjoying their annual treat. The suffering little ones were quickly conveyed to the hospital, and all are now in a fair way to recovery. The remnants of the meal were promptly secured by the police for the purpose of analysis, but up to the present no light has been thrown upon the matter. Writing on the subject the *Daily Chronicle* recalls one of the most shocking cases of its kind that ever occurred in this country. In 1858 a Bradford confectioner's assistant called on a druggist to purchase a quantity of “daff,” an adulterant then used in lozenge-manufacture. By mistake the messenger received arsenic, which the “daff” closely resembled in colour and consistency. On the next market-day in Bradford the sweets of which the arsenic was an ingredient were sold from a street-stall with the most lamentable consequences. Seventeen victims died, while numbers were permanently injured. The druggist was arrested and sent for trial, but got off with a severe reprimand.

Early Closing.

The chemists and druggists of Longton, Staffs, have agreed to close their places of business at 1 o'clock each Thursday, instead of at 2 o'clock as heretofore. A similar arrangement has been entered into at Driffield, business being suspended each Friday at 1 P.M.

The Manchester Coroner and Chemists.

At an inquest in Manchester on July 24, touching the death of a child named Staish Troisnowski, the Coroner (Mr. S. Smelt) said the child, who had been healthy and well nourished, might have got better if the parents had gone to a doctor; but they had gone to a chemist, and got some mixture in a bottle, because it was cheaper. We note that there was nothing in the evidence to show that the medicine was unsuitable.

Pure Drugs in Herts.

Mr. A. E. Ekins, public analyst to the Herts County Council, in his quarterly report, states that all the samples of drugs analysed by him, which included camphorated oil, compound liquorice-powder, and milk of sulphur, were pure.

A Surgeon's Sad End.

An inquest was held at the Manchester Coroner's Court on July 24 concerning the death of Alexander Stuart (38)

late of 4 Sidney Street, Chorlton-on-Medlock, who died from the effects of excessive drinking. It appeared that the deceased and his wife drank 14s. worth of whisky between them, after which they became ill. The deceased then sent for 2 oz. chloroform, and used it, also a pennyworth of chlorodyne, finally winding-up with some lemonade. Some person afterwards went into his bedroom, and found the doctor dead and his wife asleep drunk.

The Schoolboy "Caddy"

The practice of employing schoolboys as golf-caddies at Gloucester is growing, and does not find favour with the local magistrates. Mr H. R. Milner, chemist and druggist, 85 Barton Street, Gloucester, engaged a boy from the Painswick School Board under 13 years of age to carry his golf-clubs round the course. He did not ascertain, however, if he was a schoolboy or not, and as the School Board had been very much troubled by the boys playing truant owing to their employment as golf-caddies, the case in question was looked into, with the result that Mr. Milner was brought before the Stroud Police Court and fined 10s. and 17s. costs for employing the boy within school-hours.

In the Arsenic-works.

The question of alleged poisoning of workpeople at certain arsenic-works on the borders of Dartmoor came before the Tavistock Board of Guardians on July 22 (see *C. & D.*, March 4, page 358). The Chairman stated that he had had an interview with the mine-inspectors on the question, and the Clerk was preparing additional information for them. A committee of the Board were desired to take such steps as they thought necessary to afford the inspectors any information on the subject. In spite of the allegation that the arsenic-works were affecting the health of the population and increasing the number of those thrown upon the rates, a tabular statement received from the inspector of poor law showed that the number of persons on the rates per 1,000 in Tavistock Union was exactly the average per 1,000 throughout the western counties—namely, 34 per 1,000.

Outings.

The students of the Sheffield College of Pharmacy, accompanied by the Principal (Mr. J. W. J. Turner) and Dr. R. B. Greaves, went on Tuesday afternoon, July 25, for a botanical ramble through the Loxley Valley until Bradfield Reservoirs were reached. The specimens collected were described. The outing proved most instructive. The return to Sheffield was made at 6 P.M.

The employés of Messrs. Bennett, Sons & Shears (Limited) went for their annual excursion on July 15 to Littlehampton, the party numbering nearly 100. A sumptuous dinner was served at Read's Restaurant, Mr. J. Bennett occupying the chair and Mr. Shears the vice-chair. After dinner toasts were interspersed with harmony, and the party then dispersed for outdoor enjoyment. The majority went for drives to Arundel and the Black Rabbit, while others enjoyed themselves on the beach and at a local cricket-match until the return journey was commenced at 8 o'clock. It was generally agreed that a very pleasant day had been spent.

The third annual excursion of the Newcastle-on-Tyne and District Chemists' Association took place on July 20, when Morpeth was visited. The party left by the 1.30 P.M. train, and on arrival there the Castle was the first object of attention, the points of interest being kindly explained by County Councillor Nicholson, the present occupier. The parish Church of St. Mary's was then inspected, and the history of the ancient pile was instructively related to the members by Mr. J. R. Hardy. The ruins of Newminster Abbey were afterwards visited, and here a substantial tea was provided, after which the party went back to Morpeth, and Newcastle was reached shortly after nine o'clock.

On July 19 about thirty of the staff of Boots (Limited), chemists, Lincoln, in response to an invitation from the Rev. Vere Willson, proceeded to Fulbeck by road. After a delightful drive, they were received upon their arrival by the Rector and Mrs. Willson, who had waiting for them an excellent tea, served upon the lawn. Afterwards croquet, music, and dancing were provided, and a small party,

personally conducted by the Rector, were shown over the church, part of the Hall and its lovely grounds, and the leading objects of interest in the pretty village. The Rector also explained the various scientific instruments as used by him in the taking of the meteorological observations with which his name is well known in the county. The weather being perfect, the outing was most enjoyable.

On July 15 the employés of Messrs. Wm. Gardner & Sons, engineers, Gloucester, held their annual outing. The party left the Bristol Road works, accompanied by their wives and friends, in brakes at 7.30 A.M., driving through Huntley, Longhope, and Kerne Bridge to Whitchurch, where, after crossing the ferry, the place selected—viz., Symonds Yat-on-the-Wye—was reached at 12.30 P.M. A most enjoyable day was spent, the weather being all that could be desired and the spot lovely. At the dinner Mr. C. E. Gardner and Mr. A. J. Gardner occupied the chair and vice-chair respectively, and, replying to the toast of "The Firm," the Chairman spoke of the good business done during the past twelve months and the very bright prospects for the future. In the "Rapid Sifter and Mixer" Department alone over 100 machines had been sold during the first six months of the year. The return journey was made *via* Ross, where a halt was made, and Gloucester was reached about 11 P.M.

Cricket.

Stevenson & Howell's C.C. v. City Mills (Howard's) C.C.—Played at Bromley on July 22. Scores: S. & H., 84; City Mills, 60.

Davy Hill's C.C. v. City Mills.—In our report of this match in last week's issue we should have said that T. Sibley scored 81 and E. Sibley captured 4 wickets for 7 runs.

Allenburys v. Davy Hill's.—Played on July 22 at Wadham Lodge. Allenburys, 62; Davy Hill's 142 for 8 wickets, declared. Dellar was top scorer (61) for Davy Hill's, and Petty (22) for Allenburys. Munyard bowled well for the winners, taking 3 wickets for 6 runs.

L.C.C. Contracts.

At the weekly meeting of the Main Drainage Committee of the London County Council, on July 25, it was reported that three tenders had been received in response to an advertisement for the supply and delivery of 25 tons of caustic soda for the purpose of softening and purifying the water used in the boilers at the Abbey Mills pumping-station. The amounts of tenders were as follows:—Messrs. A. J. Luke & Co., 7*l.* 10s. per ton; Messrs. Brunner, Mond & Co., 7*l.* 12s. 6*d.* per ton; and Messrs. C. Tennant, Sons & Co., 7*l.* 12s. 6*d.* per ton. The committee recommended that the tender of Messrs. Brunner, Mond & Co. be accepted. This was agreed to.

Casualties.

Last week Mr. George F. Marriner, chemist and druggist, High Street, Borsdal, had his window smashed by a Royal Engineer sapper, who in doing so broke some shelves, and did damage to the extent of 2*l.* 10s. The sapper, who was drunk at the time, was fined 35s. and 2*l.* 10s. damages.

Swallowed a 2s. 9*d.* Bottle of Chlorodyne.

An inquest was held at the Medway Workhouse on Monday, regarding the death of Wm. John Rice, who had been found dying in a field with a chlorodyne-bottle by his side. It transpired that he had purchased a 2s. 9*d.* bottle of chlorodyne from Mr. Arthur Stooke, chemist and druggist, New Brompton. He asked for Collis Browne's. Mr. Stooke gave evidence which satisfied the Coroner that the sale was not an unusual one, and the jury returned a verdict of death from an overdose of chlorodyne.

The Limit of Endearance.

At the Marlborough Street Police Court on Tuesday, Charles Bomberger (54), a Swiss instrument-maker, of 42 King's Cross Road, was charged with using threats towards Professor Dewar.

The professor deposed that on June 5 he received a letter written in German, and last week a second. He had never seen nor heard of prisoner before, but having consulted an

authority on mental diseases, he was advised to proceed against him. The first letter received read as follows:—

Honoured Sir,—Kindly remember that the persecution which now lasts for two and a half years might be sufficient to allow you to see that a body having been persecuted for two years by electricity and other criminal tools, can prove sufficiently to deliver it to the law courts to punish the authors. Kindly command your chasers of patents to stop, otherwise I shall take measures which might not be pleasant to you.—Yours respectfully, CH. BOMBERGER, 55 King's Cross Road.

The second letter read:—

Professor Dewar,—As the persecution has not yet stopped, and as I have informed you of it, I am forced to inform you that I shall call you to account in the manner I shall think proper. Your chasers of patents have recognised you as their chief, and have mentioned such shameful revelations, and it is so degrading that it is a real shame. The shameful, miserable deed which has been committed against me you will know, and you will not be surprised if I sacrifice the last drop of blood to call the author of this shameful deed to account.—CH. BOMBERGER, 55 King's Cross Road.

The prisoner, who was remanded, said he only asked the professor something, but he did not give him an answer. If he were offended he was very sorry.

Death in a Chemist's Shop.

The shop of Messrs. Mason & Co., chemists and druggists, King Street, South Shields, was the scene of a distressing occurrence on the evening of July 19. Mr. Wm. Allison, whilst in King Street, became suddenly indisposed and entered Messrs. Mason & Co.'s shop, and had not sooner sat down on a chair than he fell to the floor and expired before anything could be done for him.

Company Dentists Alarmed.

The clause introduced into the Companies Bill, which passed through the Committee Stage in the House of Lords on Thursday last week, has brought a protest in the form of a circular letter to the daily press from the Secretary of the Dental Companies' Defence Union, London. The main argument contained in the letter is that the clause prohibiting a company carrying on the business of dentistry is a very proper one as directed against bogus companies, but manifestly unfair in its present form, inasmuch as it does in the prohibition genuine companies which have for many years been carrying on *bona fide* businesses under the direction of qualified dentists. These companies, the Union's Secretary points out, have business contracts in hand, and are under liability regarding leases and other matters which require time for their settlement, and would probably be involved in ruin if the clause named were passed unamended.

Profit-sharing.

On July 22 the directors of Messrs. E. Cook & Co. (Limited) invited about 500 of their workpeople, with their wives, to tea at their works at Bow. Afterwards there was a smoking concert, at which Mr. William Cook presided, supported by Messrs. H. J. Cook, T. Alick Cook, Samuel Hall, E. Miall Cook, and E. Harvey Cook. In the course of the evening the Chairman distributed the bonuses, stating how pleased the company were to be able to invite those who had been with them during 1898 to share in the profits of the year's trading. He pointed out how that for many years the old firm had distributed bonuses, and it was a real pleasure to the company to be able to continue this excellent practice, and so bring about a mutual and kindly feeling between the employers and employed.

"Poison!" à la Stiles.

During the hearing of a charge of attempted suicide at North London Police Court on Wednesday a small bottle was produced which was said to have contained oil of tar. This drug the prisoner had swallowed, and Dr. Stiles, of Hornsey Rise, said that whoever the chemist was who supplied it was wrong in not labelling it "Poison," because it was decidedly a dangerous drug.

"I BOUGHT of you some time since 'Pharmaceutical Formulas,' and find it simply invaluable."—H. L. H. (4/64)

Irish News.

Local newspapers containing marked items of news interesting to the trade are always welcomed by the Editor.

Business Change.

Mr. D. S. Binnett, pharmaceutical chemist, has opened a pharmacy at Cahirciveen. Mr. Binnett was formerly with ex-President Wells and the Cork Chemical and Drug Company.

Reduction Wanted.

Messrs. J. Daly & Co. (Limited), mineral-water manufacturers, Cork, have applied to the Master of the Rolls for permission to reduce their share capital from 95,000*l.* to 75,000*l.* owing to losses in trade.

The Public Analyst's Duty.

Sir Charles Cameron, public analyst, has told the Mullingar Guardians that if a drug is suspected to be adulterated it would be his duty to analyse it, but that systematic examinations of drugs supplied to the union and not suspected of adulteration would not be his duty as public analyst. He offered to do the work, and left it to the Guardians to fix his scale of payment. They are to give him 10*l.* a year.

The Accident to Mr. Downes.

We mentioned last week that Mr. R. J. Downes, President of the Pharmaceutical Society of Ireland, had met with an accident which would prevent him attending the Conference. Our Dublin correspondent now sends us particulars of the affair, which show that Mr. Downes narrowly escaped losing his life. He was travelling to business one morning last week by the electric tram, and, wishing to alight—the conductor being engaged—he stepped off the car (thinking that it had slowed down), missed his footing, and fell heavily to the ground, the rear portion of the tram passing above his head and shoulders with scarcely an inch to spare. A crowd at once collected, and the tram was stopped. Mr. Downes was assisted to his feet, when it was found that, although dazed and greatly shaken by the fall, he was apparently uninjured. Mr. Downes proceeded at once to Messrs. Graham's State Pharmacy in Westmoreland Street, an adjoining thoroughfare, where Dr. Walsh, M.C.P.S.I., administered some restoratives, and after a short period the President was able to drive home. During this time, beyond a feeling of soreness in the arm—due, it was thought, to the sudden fall—nothing more serious than a bruise or a slight abrasion was apprehended, but on examining the arm Dr. Houston found it to be broken close to the shoulder. The fracture is a serious one, but Mr. Downes is making good progress towards recovery.

Drug-analysts.

At the last meeting of the Kinsale Union a letter was read from the Local Government Board declining to sanction the appointment of Mr. J. A. Ray, jun., as analyst to the union. They want an F.I.C. with considerable experience in the analysis of drugs, because "having regard to the penalties which contractors may incur in the event of the analyst making an unfavourable report upon the drugs supplied to the union, it is essential, for the protection of both the Guardians and the contractors, that only analysts with superior qualifications and large experience in the analytical examination of drugs should be appointed." Mr. Ray also wrote stating that his private practice as an analyst, and engagements in connection therewith, are daily increasing, and consequently, as he intends to perform all analyses personally, he cannot undertake work for unions; so he resigned the appointment. The Guardians are to advertise again.

The Monaghan Guardians have had similar correspondence with the Local Government Board regarding Mr. Wilson, who, they say, is not eligible for the appointment of drug-analyst because he is not an F.I.C., &c. The Local Government Board then called upon the Guardians to make another appointment. Mr. Whelan, J.P., said that he saw by a report that the Pharmaceutical Society were sending a deputation to the Local Government Board on this subject,

and, pending the result of the conference, he thought this question should be postponed. Mr. Keenan, J.P., agreed. Mr. McCormick said that if Mr. Wilson was an Englishman there would be no question at all about his appointment. After some little discussion Mr. Whelan's suggestion was acted on.

Place aux Dames.

The Mullingar medicine-contract has again come under the notice of the Guardians of that Union. Tenders for the supply of drugs were received from Messrs. Clarke & Co., Belfast; the Cork Chemical and Drug Company; Thacker & Hoffe, Dublin; Leslie & Co., Dublin; Boileau & Boyd, Dublin; Hunt & Co., Dublin; and Mrs. English, Mullingar. It was proposed to give the contract to the lowest tender. An amendment was proposed by Mr. O'Connor that the contract be given to Mrs. English on the ground that it would be false economy to give it to a Dublin firm. They should keep the 200% in the town. He defied the Local Government Board. The Chairman said Mrs. English got her medicines from a Scotch firm; was that benefiting the rate-payers? Mr. Shaw seconded the amendment. He had examined the L.G.B. list, and found that many articles in it could not be supplied at the required reduction of 55 per cent. For instance, cream of tartar was quoted at 1s. per lb., and 55 per cent. off that price would make it about 6d., while the cost-price was 9d. or 10d. The Apothecaries' Hall prices were the standard for Ireland, and Mrs. English's were lower than that standard. The Clerk said Messrs. Clarke's tender was informal, as no sureties were named. On a vote being taken, 14 voted in favour of Mrs. English and 11 for Leslie & Co. Mrs. English was accordingly declared contractor. For the supply of medical and surgical requisites Mrs. English was also appointed contractor, so that the L.G.B. are sure to have something to say to the Guardians, as they have done in the contract for surgical instruments for the Listowel Union. That Board had two tenders from her—one giving 20 per cent. abatement, the other 30 per cent. The latter was accepted. The L.G.B. point out that the Guardians' procedure was grossly irregular; as Mrs. English is drug-contractor she cannot supply surgical instruments, and the two tenders at different prices disqualify her from obtaining the contract.

Scotch News.

Local newspapers containing marked items of news interesting to the trade are always welcomed by the Editor.

Situation Vacant.

We find the following vacancy advertised in the want column of the *Paisley Daily Express*:—

Wanted, young man to learn the drug-trade; one who has been a grocer for two or three years preferred.—Apply *Express* office.

If there is much of that sort of stuff in the West of Scotland it is not surprising that "chronics" are so numerous.

A Successful Student.

Mr. Henry Fraser, Ph.C., a former prize-winner in our "Corner for Students," has just passed his third professional examination, with double honours for the degree of M.B., Ch.M., at Aberdeen University. Mr. Fraser has had a brilliant record. During his apprenticeship he attended the evening science and art classes at Gordon's College, and secured first-class certificates in advanced organic and inorganic chemistry and botany, being Queen's prizeman in organic chemistry and botany. He passed the Minor in 1895, and three months afterwards took the Major and the Pharmaceutical Society's silver medal. In October of the same year he was appointed teacher to the Aberdeen School of Pharmacy, and commenced the study of medicine at the University. At the University he secured a first prize in osteology, two prizes in anatomy, and a first in botany. He has also obtained medals in physiology, materia medica, practice of medicine, pathology, and forensic medicine, besides being Fife-Jamieson gold medallist in anatomy and Keith gold medallist in surgery. In his second year he obtained a three years' bursary, and has double honours in

first, second, and third professional examinations. He is Vice-President of the Students' Representative Council, and President of the University Medical Society.

Prizes for Apprentices and Assistants.

Mr. James Lennox, the Secretary of the Edinburgh Chemists', Assistants', and Apprentices' Association, sends us a syllabus of the prize competitions which the Association promotes, and which now embrace the examinations for apprentices, undergraduate members—whatever that may mean—and all Association members. For apprentices there are the McLaren prize of 2l. 2s., and second and third prizes for the best candidates in an examination of prescriptions, elementary botany, and chemistry and materia medica. The Ewing pharmacy prize, value 1l. 1s., is also for apprentices who have passed an examination in B.P. prescription-reading, posology, and British metric system of weights and measures; a second prize of 10s. 6d. is offered by Mr. William Aitken, a former President of the Association. The Pottage prize, value 2l. 2s., is to be awarded for the best herbarium sent in by any member of the Association. Another botanical prize is the Bowman, value 1l. 1s., open to apprentices and undergraduate members of the Association who in an examination of two hours will be expected to name, classify, and describe plants belonging to twenty genera. To encourage the study of physics the Dott prize, value 1l. 1s., is offered to the last-named class of members, who are to be examined in dynamics, hydrostatics and heat. Those interested can obtain copies of the syllabus from Mr. Lennox, 139 Princes Street, Edinburgh. These prizes are the most numerous offered by any pharmaceutical association in the kingdom.

French News.

(From our Paris Correspondent.)

A DISASTROUS FIRE occurred last week at the works of Messrs. Blain, chemical manufacturers, Marseilles. The damage is estimated at close upon 50,000l.

AMERICAN VISITORS.—At the last meeting of the Paris Academy of Medicine the presence was announced of Doctors R. and A. de Schweinitz, the first-named gentleman being Director of the Laboratory of Biological Chemistry of the U.S. Ministry of Agriculture, and the second Oculist Professor at the Jefferson Medical College, Philadelphia.

ITEMS OF INTEREST.—M. Guelpa has presented to the Paris Society of Therapeutics a new model of a pocket-spittoon for tuberculous patients. It is easily taken to pieces and readily cleaned.—The Pharmacists' Co-operative Society for the manufacture of iodine and derived substances held its annual meeting at the Paris School of Pharmacy on July 27, when a favourable report was given of the Society's business.

M. GEORGES, professor of chemistry at the Val-de-Grace Military School of Medicine and Pharmacy (where all French army pharmacists pass a year before obtaining their commission), was named "Officer of the Academy" on the occasion of the recent inauguration of the statue of Baron Larrey. He has, of course, been an officer in the military sense of the word for many years past.

FOREIGN MINERAL WATERS.—In the course of a discussion with reference to granting permission to import a certain Tyrolean mineral water into France, the Academy of Medicine adopted the following resolutions:—"Mineral waters may be freely sold except purgative, arsenical, and sulphurous waters, which should only be sold by pharmacists holding the French diploma."

TWO OF A NAME.—M. X. is a second-class pharmacist, while another M. X. possesses the first-class diploma. The former profited by the identity of their surnames to announce himself in sundry advertisements in foreign newspapers, &c., as a first-class pharmacist. The latter prosecuted, and has obtained a judgment from the Seine tribunal declaring his second-class namesake guilty of disloyal competition. The Court forbade the defendant to style himself a first-class pharmacist, and decided that each contravention should entail a fine of 20f.

TUBERCULOSIS EXPERIMENTS.—MM. Robin and Binet have reported to the Academy of Medicine certain experiments on tuberculous patients with arseniate of soda (5 milligrammes to 1 centigramme per diem or 4 milligrammes rectally). They consider that in some cases it has an exciting effect on the respiratory organs if as much as 1 centigramme per diem is administered.

SIX MONTHS' TRADE.—The returns of French imports and exports for the first half of 1899 are somewhat in favour of that country, inasmuch as the exports show an increase and the imports a decrease; but the whole trade shows a falling-off of 511,800*l.*, and the imports exceeded the exports by 14,288,240*l.* The imports totalled 87,452,560*l.*, as compared with 93,673,160*l.* in the corresponding period last year—a diminution of 6,220,600*l.* Exports, on the other hand, reached 73,164,320*l.*, against 67,455,520*l.*, an expansion of 5,708,800*l.*

PARISIAN PUBLICITY.—Since the artistic-poster craze was instituted, mural-advertising has greatly increased in popularity in France. One of the largest posters—certainly the biggest I ever saw devoted to an article exclusively sold by pharmacists—is the 12 feet by 6 feet *affiche* of the medicated tonic-wine, *Vin Désilex*, which is just now particularly conspicuous on the boulevards and elsewhere. This is a portrait of Mlle. Delna in her popular operatic incarnation of the “*Vivandière*.” It seems especially appropriate to some of us who, like your correspondent, were neighbors of the charming cantatrice in the days when she sang on Sunday afternoons in the wineshop of one of her relations at Meudon, near Paris. As might be naturally expected during this thirsty weather, advertisements of beverages and seaside resorts are largely in evidence on Parisian hoardings. The various tonic-wines (“*Methusalem*” is the name of one of them) and aerated waters are well to the fore. One of the former, known as *Quinquina Monceau*, had an advertisement showing a portrait of the late President Faure. The *Sparklets* poster may be seen side by side with the advertisement of a French *gazogene* apparatus. The *St. Galmier* water shows us a charming damsel of Ancient Rome refreshing herself. In *Liebig's* extract-of-meat advertisement the lady is of the fair haired type, and, with the bull that accompanies her, reminds one of the legend of Europa. The *Bon Marché* advertises a speciality for dressings by a military scene in which the orthodox wounded cuirassier, attended by the orthodox Sister of Charity, cannot fail to appeal to supporters of the church and army. “*Iciline*” introduces us to the Garden of Eden, where Eve, clad in her fair tresses, is tempted by the serpent with this speciality. Toilet-requisites are likewise advertised in this way, often with much cleverness. For instance, the little girl brushing her doll's teeth is charming in its *naïveté*; and the handsome hirsute couple who gaze from their opera-box on the rows of bald heads in the stalls, and remark that a certain hair-speciality is evidently unknown to these unfortunates, is very well imagined. A lady brushing the “*ivories*” of a grinning negro in evening dress may also be remarked as a dentifrice-advertisement. The “*Eau-de-Suez*” dentifrice introduces an Egyptian Sphinx; while among the big luminous signs now conspicuous on the Grand Boulevards are the *Famora* perfume, the dentifrice of the *Bénédictins* of Soulac, *Van Houten's* cocoa, &c., which flash the lettering in the eyes of the boulevard loungers near the Grand Opera at night.

Colonial and Foreign News.

BRAZILIAN STAMP TAX.—The stamp-tax collected at the custom-house of Rio de Janeiro on drugs, perfumery, pharmaceutical products, playing-cards, matches, &c., produced in June only \$39,474, as against \$83,289 in May.

APOTHEKER BÜHLER, of Basel (Switzerland), has been struck dead by lightning while on a two days' geological expedition in Wntachthal with a friend. Bühler was a man of wide attainments, having intimate knowledge of geology, zoology, botany, and ornithology, as well as pharmacy.

CINCHONA IN THE NILGIRIS.—Mr. T. C. Anderson, a well-known cinchona and tea planter, is the possessor of an estate at Glen Morgan, near Ootacamund, where he has 45,000 trees of hybrid cinchona, mostly of a mature age. The bark has analysed 6 per cent. quinine sulphate and has brought 1*s* per lb. Cinchona cultivation on the Nilgiris is greatly extending.

A FATAL ERROR.—A Cairo correspondent sends us the following:—“Two natives of the village of Sarra, in the district of Menoof, entered a druggist's shop in that village and asked for a *seidlitz* powder. The druggist was out, and his wife, who was attending to the shop, served them. Unfortunately, being inexperienced, she gave them a poisonous powder instead of the harmless *seidlitz*. Both died afterwards.”

A PHARMACY FOR PHARMACISTS.—Messrs. Merck & Co., New York, have issued a circular to the druggists of the United States, stating that the Merck Pharmacy will no longer serve the public nor the medical profession on prescription orders, nor calls for supplies of any sort. Orders of this character must hereafter come through established pharmacists. The proprietors say the Merck Pharmacy will become exclusively “a pharmacy for pharmacists.”

PHILADELPHIA EXPOSITION.—The invitation to take part in the International Commercial Congress to be held at Philadelphia, in October, has been accepted by Lord Salisbury on behalf of Great Britain and Ireland. In his letter of acceptance the Premier says that a further communication will be sent as soon as the views of the Colonial Governments are known. The Exposition authorities are delighted at this favourable acquiescence, and expect the good example to be as promptly followed by other European nations.

A FIND OF NATURAL CARBONATE OF SODA.—A discovery of a limitless supply of carbonate of soda is reported to have been made at Sonora, in Mexico. The deposit covers seventy acres, in the centre of which springs exist, the water being strongly impregnated. From the evaporated water which has covered the area a crust of crystallised salts, 1 to 3 feet thick, abounds, beneath which is 1 foot or 18 inches of water. On the removal of the crust the water takes its place and evaporates. It is supposed that at least 10,000 tons of the material are available at present.

IMITATING PEARS' SOAP.—In the District Court of Colombo, Messrs. A. & F. Pears have filed two complaints, for the recovery of damages under the Patent Laws, against two shopkeepers in the Pettah—viz., M. S. Saldin and Ibrahim Bin Ahamad. The plaintiffs allege that the defendants are importing and selling at their shops in Colombo a spurious imitation of their soap, and they claim from the defendants, in each case 5,000*r.* as damages. The boxes containing the spurious tablets of soap are at first glance exactly similar to those of Pears' triple-scented rose soaps. An interim injunction was granted, pending the trial of the cases.

SACCHARIN IN HOLLAND.—The Society of Beetroot-mannufacturers at the Hague have called the attention of the Dutch Minister of Finance to the increased consumption of saccharin in Holland, which in their opinion will eventually have the effect of considerably reducing the receipts of duty payable on sugar. So long as saccharin was obtainable in the form of powder only, the prospect of a more general consumption was not very great, but it is now obtainable from almost any grocer's shop in tablet form at low rates. Saccharin, they contend, has a great advantage over sugar, as it only pays 5 per cent. import duty *ad val.*, whereas sugar has to pay about 200 per cent. of its value.

COLLECTION OF DEBTS IN JAPAN.—The U.S. Consul-General at Yokohama states in a report to Washington that the courts provided for the recovery of debt in Japan are (1) *Ku saibansho*, or local courts, having jurisdiction over claims under 100 yen (\$50) in amount; (2) *Chiho saibansho*, or district courts, for cases involving larger amounts. From the *Chiho saibansho* appeals lie to the (3) *Koso in*, or appeal courts, and to the (4) *Daishin in*, or supreme court of the Empire. Foreign plaintiffs not residing in Japan should furnish their agents there with powers of attorney, with authority of substitution, attested by a diplomatic or consular officer of Japan. They are required to give security for costs. The period of limitation is two years.

Westminster Wisdom.

COMPANIES BILL.

On July 20 the Lords went into Committee on the Companies Bill. The Lord Chancellor said that the Select Committee to whom the matter had been referred thought it well to rely rather on the prevention of fraudulent companies than on the infliction of pains and penalties on persons who were engaged in the conduct of such companies afterwards. They thought it more prudent to see that in the initiation of new companies certain precautions should be adopted to prevent their beginning business until they had sufficient capital, and that would be afforded by a provision against allotment until a certain proportion of the capital had been subscribed. Furthermore, the Select Committee had thought that the proposed directors of a company should be called upon to sign a declaration that they intended to be directors of the company for which they were advertised. The Committee, during the three years that they had sat, had no doubt done good work, for they had arrived at a practical unanimity with regard to this important mercantile subject. The Bill then passed through Committee.

ARMY CHIROPODISTS.

In reply to Sir J. Colomb's question in the House of Commons on July 21 with reference to the employment of chiropodists for infantry brigades, Mr. Wyndham said the matter had been under the careful consideration of the military authorities, and, as an experiment, some men of the Royal Army Medical Corps were last year instructed in chiropody, and a class of non-commissioned officers was subsequently formed at Aldershot. The experiment was successful and its extension was under consideration, but it would be obviously impossible to provide trained men for this year's manoeuvres.

SALE OF FOOD AND DRUGS BILL.

The discussion on this Bill was resumed on July 21. Mr. Heywood-Johnstone moved as an amendment that every tin of condensed, separated, or skimmed milk should bear the statement that such milk was not suited for the food of infants. He said many public health authorities were in favour of this amendment, which was also supported by the Select Committee's report. The object was to put a stop to a great amount of infant mortality in large towns. Mr. Long said what was wanted was that there should be a proper description of the article sold, but the tins in which this food was sold were very small, and there was very little room upon them for an inscription which would be legible. Mr. Warner (Stafford) pointed out that the word "Poison" was placed as a warning on the labels of certain medicines, and as this so-called milk was poison to infants and children he thought the fact ought to be pointed out in some such way to those who purchased it. Mr. Long said if he was able to find suitable words which would convey the necessary information in a concise form, or if his friends could suggest suitable words, he would be glad to propose them on behalf of the Government, whereupon several suggestions were quickly forthcoming. Mr. T. P. O'Connor said he would be quite satisfied if the label contained the words "Unsuitable for infant children." Mr. K-arley wanted "This milk shall not be used as food for infants." Mr. Bartley made the House smile when he said that the label should be "Bad for babies," and Serjeant Hemphill asked if Mr. Long would accept the word "Infanticide." The House apparently was not serious about the matter, and it was left at that. After further discussion, Mr. Heywood-Johnstone expressed himself satisfied with the undertaking of the President of the Board of Agriculture, and withdrew his amendment. The penultimate stage of the Bill was reached in the House on Monday evening, when Mr. Long moved an amendment in Clause 22, providing that "this Act shall apply to Scotland, with the substitution for the Local Government Board of the Local Government Board for Scotland." The amendment being agreed to, Mr. Long, in Clause 25 (definition of food), moved to omit the words "The definition of 'food' contained in

section 2 of the Sale of Food and Drugs Act, 1875, is hereby repealed." The amendment was agreed to.

Mr. Long then moved the following schedule, which was agreed to:—

Enactments Repealed.

Session and Chapter	Short Title	Extent of Repeal
38 and 39 Vict., c. 63	The Sale of Food and Drugs Act, 1875	In Section 2 the definition of the term "food." In Section 14 the words "offer to," and the words "proceed accordingly and shall." Section 15. Section 10.
42 and 43 Vict., c. 30	The Sale of Food and Drugs Act Amendment Act, 1879	
50 and 51 Vict., c. 29	The Margarine Act, 1887	In Section 6 the words "or with," and the words "not less than a quarter of an inch square."
54 and 55 Vict., c. 46	The Post Office Act, 1891	Section 11.

Mr. Long wished to have the Bill read a third time, but on the appeal of various members, backed by the front Opposition bench, he agreed to the adjournment of the debate.

The adjourned debate on the third reading was resumed on Tuesday, and in concluding it Mr. Long said he was glad to have it acknowledged that the Bill contained much good. He assured the House that the department would carry out the work with no desire to bolster up home products, but with a view that a pure article of home production should compete against a pure article of food from abroad. With regard to the imprisonment-clause the Government were convinced that unless some power of this kind was introduced there would be a continuation of that kind of fraud which had resulted in the production of an article, 99 per cent. of which was sold as a pure article, whereas it was not. It was only by the power to inflict imprisonment that the wealthy trader was put on the same footing as the poor trader. The wealthy man who was determined to sell a fraudulent article could pay his fine a dozen times over; but if he had to run the risk of imprisonment he would realise that the best policy was to be honest. With regard to the question of invoice and warranty it was proposed to insert in another place a clause which would give power to take samples at the place of delivery. It was also proposed to raise the penalty for a second offence to 20%, and for a third offence to 100%, or imprisonment. That would have a material effect on the givers of false warranties. But a more important change still was to be made. At present, if a retailer was prosecuted for selling an adulterated article, and succeeded in shifting the blame on to the wholesale dealer who had given a false warranty, it was necessary to follow the wholesale dealer to the place where he was to be found. The Government proposed that the local authority should be able to institute proceedings against him in the place where the offence had arisen. He believed that if an invoice contained special words which would bear the construction that the seller guaranteed the article he sold, it ought to be held to be a warranty. There was considerable diversity of opinion as to that among those who administered the law, but he hoped, before the Bill reached the Committee stage in another place, the Government would be able to find some words which would clear up any doubts as to the legitimate use that ought to be made of an invoice. The Government were determined that the powers of the Bill should not be used for the purpose of harassing either small or large traders. At the same time they were determined to use these new powers to put down fraud and illegitimate trading, and to secure for the public the supply of pure and unadulterated articles at the proper price. The Bill was then read a third time.

NOT WESTMINSTER WISDOM.

At the annual meeting of the National Retail Jewellers' Association, held at the Holborn Restaurant on June 17, a paper was read by Mr. Bruford, a well-known Leicester jeweller, in which an appeal was made to redress the growth of misrepresentations and fraud in the trading of the present day. The author said that every journal, particularly those of a religious character, showed statements which were inaccurate and exaggerated, and in his opinion the only effectual remedy for the evil was by legislation. The Association, he said, was promoting the Fraudulent Sales and Advertisement Bill, which would be balloted for next Session, and which would, he hoped, be successfully piloted through Parliament by Major Rasch, M.P., a Vice-President of their Association. They proposed to frame the Bill on similar lines to the law already enforced in New York State and also in Germany, their object being to make it as wide and far-reaching in punishing fraud as possible, not only by fines, but by making fraud a misdemeanour punishable by imprisonment. This should apply not only to private advertisers, but also to the directors of companies and to the managers of any paper or periodical—that is to say, they would fix the responsibility on any person connected with a proven, deliberate misrepresentation, whether in a public advertisement, private pamphlet, or by circulation in a shop-window or transaction in shops or offices. They thought the system of "giving away" to be unfair, and had no sympathy with the principle whatever. "We think," continued the author, "the wonderful cure-alls and heal-alls should be required to justify themselves before the too-confiding public are permitted to try them—perhaps to poison themselves. It is difficult to prove that pills are worth a guinea a box, but if it were incumbent upon the vendor to prove the statement he would possibly adopt some other equally effective advertisement, and the same reason applies to the entire subject. Once let it be understood that any untrue or equivocal statement was liable to challenge before the magistrates and the thing is done." A letter from Dr. Anderson, Chief of the Criminal Investigation Department, expressing approval of the proposed Bill, had been sent to the Chief Constables of every county, city, and borough of the United Kingdom, and they all, with one exception, heartily concurred, offering valuable suggestions.

DRUG-ANALYSTS IN IRELAND.

In the House of Commons on Monday, Mr. MacAleese asked the Chief Secretary, with reference to the appointment of analytical chemists in Ireland to the poor-law unions for the analysing of drugs, if he could state what qualification the Irish Local Government Board required that they should possess, how many appointments had they sanctioned so far, and what was the full qualification of each chemist that had been appointed.

Mr. Gerald Balfour, in reply, said that in view of the importance of the duties, the Local Government Board require, in the case of persons who are not already public analysts under the Food and Drugs Act, educational attainments equal to those possessed by such of the Fellows or Associates of the Institute of Chemistry of Great Britain and Ireland as have obtained the certificate granted by the Institute after examination in therapeutics, pharmacology, and microscopy. The Board have sanctioned the appointment of one gentleman who possessed the foregoing qualifications, but who had not hitherto acted as public analyst.

DISPENSARY-DOCTORS IN IRELAND.

In the House of Commons on Monday evening Mr. Gerald Balfour, Irish Secretary, replying to the questions on this subject by Mr. J. F. X. O'Brien and Captain Donelan, which we printed last week, said that the order for the payment out of the rates of substitutes for dispensary-doctors when on ordinary leave was made not under the Local Government Act of last year but under the eighth and twelfth sections of the Medical Charities Act, 14 and 15 Vict., c. 63. So far as he had been able to ascertain, the practice of requiring the doctors to pay their own substitutes, which appears to exist in the Cork Union, is not the general practice in Ireland. If, however, it can be shown it is the established practice in the Cork Union, and understood as such by the gentlemen appointed dispensary-doctors in

that union, the Local Government Board are quite ready to consider whether, consistently with the terms of the new dispensary order, to which they attach great importance, some arrangement cannot be made to meet the case, whether by re-arrangement of duties or otherwise. In reply to a further question by Captain Donelan as to whether the Local Government Board had sent such orders to the Cork Union as was mentioned in the question, Mr. Gerald Balfour replied that general orders had been sent.

THE CASTNER-KELLNER PROCESS.

In the House of Lords, on July 24, in the appeal case of the Castner-Kellner Alkali Company (Limited) v. Commercial Development Corporation (Limited), the following petition of the appellants was read and referred to the Appeal Committee:—"That it may be ordered by this House that until the hearing of their appeal in this House they shall not be compelled to pay to the respondents the costs directed to be paid under the order of the Court of Appeal of April 22, 1899, except upon the undertaking of the respondents' agents to repay the same in the event of the decision of this House being in the appellants' favour."

THE HALFPENNY POST.

In the House of Lords on Monday, Lord Monckswell moved "that in the opinion of this House the rules governing the transmission of documents by the halfpenny post are anomalous, unsatisfactory, and difficult to interpret, and ought to be amended." He said that tradesmen and others had their special grievance, as in sending a receipt by the halfpenny post they could say "Receive 1," but not "Received with thanks." He should be satisfied if the noble duke the Postmaster-General would consider whether he could not import some modicum of common-sense into the interpretation of these postal regulations. The Duke of Norfolk, in reply, said there was extreme difficulty in dealing with every case on an equal footing. The fact was that in the Post-office, as in other departments, any concession made to the public was sure to lead to a great many difficulties and opened the door to a great many claims of a like nature. Every effort was made to meet those claims that were just, but it was found impossible to grant everything asked for. The present difficulty had arisen out of efforts to meet the wishes of the public; and instead of ruling that nothing in the nature of a letter should pass at the lower rate, the Postmaster-General in 1892 drew up rules for the information of the public as to what might and what might not pass at the halfpenny rate. While he could not accept the somewhat sweeping terms of the motion, he could assure the noble lord that the subject-matter of it had received, and would receive, careful attention, and any practical suggestion would be welcomed from any quarter. The motion was then withdrawn.

Marriages.

DICKSON—FLATELY.—On July 22, Mr. John Dickson, pharmaceutical chemist, 35 Hestercombe Avenue, Munster Road, Fulham, S.W., to Miss Gertrude Flately.

KNOTT—GREGORY.—On July 19, at St. Matthews Church, Bolton, by the Rev. E. S. Richardson, vicar, Mr. Herbert Knott, of the firm of Knott Brothers, chemists, Bolton, to Miss Edith Mather Gregory, of Bolton.

Death.

EDWARDS.—On July 13, at Market Deeping, Frances Louisa, wife of Mr. W. R. Edwards, chemist and druggist. Aged 32. The deceased lady was one of the persons who was stabbed in the streets of Lincoln more than a year ago, and it was believed by her medical adviser that the injury and consequent shock to the nervous system accelerated her death.

Legal Reports.

"Dolly" Blue.

IN the Court of Appeal on Saturday, before the Master of the Rolls, Sir Francis Jeune, and Lord Justice Romer, the hearing was resumed of the case of *Edge & Sons (Limited) v. Gallon & Son* on appeal by the defendants from an order of Mr. Justice Byrne, who had granted an injunction restraining them from selling laundry-blue by the name of "Dolly" blue. The Court allowed the appeal, and the Master of the Rolls, in coming to this decision, made the following interesting statement about the blue :—

When the facts were ascertained there was no difficulty about the law. The case was unique; he had never known one like it before. The peculiarity of it was this: that there was a time before the plaintiffs were manufacturers of blue when Ripley's blue was known, not in the trade, but among a certain class of people—those engaged in the business of washing—as "Dolly" blue. Ripley himself did not call his blue by that name, but it was known as such. He marked his packets with a dolly-tub and stick, and he registered that device as his trade-mark in 1876, and had used that trade-mark ever since. In his application for registration he called the device a "dolly." The evidence proved that the term "Dolly" had been applied by laundresses—the retail buyers—to Ripley's blue. It was first called "the blue with the dolly on it," and then "Dolly" blue. It required very little evidence to prove that, when once it had been called by the former name, it would soon get to be called simply "Dolly" blue. The evidence proved that this was so. This was an all-important fact, and it compelled the Court to say that the learned Judge had made a mistake. What right had the plaintiffs, knowing this fact, to prevent Ripley from selling his blue as "Dolly" blue? William Edge was in 1889 informed by a letter from Ripley that his blue was known as "Dolly" blue. This was a matter of importance in a moral aspect. No answer was given to that letter. The plaintiff made inquiries in the trade and found that Ripley's blue was not known there as "Dolly" blue. That was quite accurate. But the fact remained that Ripley's blue was known among a certain class of people as "Dolly" blue, and was asked for and sold as such. The plaintiffs had, inadvertently perhaps, though they had been put on their guard, advertised their blue as "Dolly" blue, and had created a large demand for it. They had been trying to squeeze out a rival manufacturer by the use of a term which had two meanings. Did this impose any obligation on their rival in trade? There was neither law nor commercial morality to that effect. The plaintiffs should have selected some other term for their blue. They had acquired no right to prevent Ripley or the defendants from doing what they had been doing. The plaintiffs' case entirely failed. There had been no passing off of Ripley's goods as the plaintiffs' goods, and indeed there was no evidence that anyone had been deceived. The order appealed from must be discharged, with costs in both courts.

Sir F. Jeune and Lord Justice Romer concurred.

Mr. J. Outler said that the plaintiffs would probably desire to appeal to the House of Lords, and he asked that the defendants' solicitor might give an undertaking to refund the costs in case the appeal should prove successful. Mr. Butcher, Q.C., assented to this.

Trade-secrets.

ON Friday, before Mr. Justice Kekewich, in an action of Courtney's Worcestershire Sauce Syndicate *v. Courtney*, Mr. Ashton Cross moved for an injunction to restrain the defendant from communicating certain secrets with respect to the manufacture of sauce. He said the defendant, who was present in court, desired time to instruct a solicitor, and was willing to give an undertaking in the terms of the notice of motion for a fortnight, to which he had no objection. Mr. Wm. O. Courtney, the defendant, having signed the registrar's book, the motion stood over for a fortnight.

About Soap

MR. JUSTICE STIRLING, sitting in the Chancery Division, on July 22, had before him the case of *J. Crosfield & Sons (Limited) v. Sharp Brothers Soap and Perfumery Company (Limited)*. This was a motion for judgment. Mr. Sebastian said the action was originally before his Lordship twelve

months ago, when an undertaking had been given in the terms desired. It was now agreed that that undertaking should be made perpetual, the defendants to pay 400% and costs, there being a stay of all further proceedings. Minutes had been agreed on, and he asked his Lordship to give judgment on these terms by consent. Mr. Pryce appeared for the defendant company, and assented. Mr. Justice Stirling entered judgment accordingly.

Fumes from Chemical-works.

THE adjourned summons against Messrs. Hardman & Holden chemical-manufacturers, Miles Plating, for allowing noxious fumes to escape from their works was heard before Mr. Headlam at the Manchester Police Court on July 24. The summons is only the first of a series of like prosecutions. The defendants carry on various processes of distillation, including that of coal-tar and benzol, and they manufacture sulphate of ammonia, sulphuric acid, and pyridine. In all the processes connected with the manufacture it was contended that the effluvia was very objectionable to the public and injurious to health. It was also stated that sulphuretted hydrogen turned wood and stone blue, and that the neighbourhood of the defendants' works had become quite discoloured. After further evidence of a like nature, the case was further adjourned.

Sulphuric-acid Disputes.

IN the Queen's Bench Division on Monday, July 24, before Mr. Justice Bigham, the part-heard case of *Packard v. Webb* was concluded. The action was brought some time ago by Messrs. Edward Packard & Co. (Limited), chemical-manufacturers, of Bamford and Ipswich, to recover 3,000*l.* damages from Mr. Thos. Geo. Webb, a glass-manufacturer, of Manchester. The defendant claimed to be the inventor and owner of a patent for the manufacture of sulphuric acid by concentration. In 1896, according to the plaintiffs, he represented to them that he had erected installations of his process worked by water-gas at Halle and in Paris, and that at another factory it was working satisfactorily. He said that it was capable of producing 4 or 5 tons a day, and that the cost of labour, &c., would not exceed 5*s.* a ton, nor the breakages 1*s.* per ton. The plaintiffs said that all these representations were false. Plaintiffs, relying on the defendant's representations, entered into an agreement with him for the erection of apparatus capable of producing 5 tons of acid of one quality or 4 tons of another per day of twenty-four hours. The defendant erected a double installation which plaintiffs alleged was totally incapable of producing the required quantity of the acid—only 2 tons 13 cwt. 1 qr. 4 lbs. of impure acid per day. The defence was a denial of all the points of claim, and a counterclaim for goods delivered, &c., amounting to 277*l.* 15*s.* At the previous hearing in May the case was adjourned in order to allow a test to be made of the defendant's apparatus in the presence of experts, and there had been frequent adjournments for the purpose. A report was now furnished to his Lordship, and a consultation took place in his room, as a result of which judgment was given for the plaintiffs for 500*l.* and costs, and for the defendant on the counter-claim for 277*l.* and 23*s.* costs.

IN the Chancery Division, on Tuesday, Mr. Justice North resumed the hearing of the case of *Staples v. Anderson*, in which plaintiff, a director of F. Hallam & Co, sulphuric-acid manufacturers, of Burton-on-Trent, claimed damages from the defendant in respect of alleged misrepresentation, by which he was induced to take shares in the company. Defendant gave a total denial to all allegations of fraud or deceit. Plaintiff's case was that the defendant represented to him that the company was doing well, and that for the year ending September, 1897, sufficient profit had been made to permit of the payment of a dividend of 7 per cent. As a matter of fact, a mistake had been made in the balance-sheet of the company, and little, if any, profit had been made—certainly not sufficient to pay a dividend. After hearing evidence on behalf of the plaintiff, and counsel's arguments for the defendant, Mr. Justice North held that

the plaintiff had failed to make out a case of fraud or deceit, and dismissed the action, with costs.

Sale of Food and Drugs Act.

THE WHOLESALERS TO BE CALLED.

A CASE was heard at Clerkenwell last week which admirably illustrates the possibility under the present Acts to make wholesalers parties to an action on the strength of an invoice. George King, of 195 Central Street, St. Luke's, was summoned for selling white pepper adulterated with 40 per cent. of ground maize. Defendant, who was summoned by Inspector Cox, of the Holborn Board of Works, said he bought the pepper as genuine, and sold it as he received it. He produced the invoice. Mr. D'Eyncourt adjourned the summons, in order that the wholesale dealer should be summoned, and both cases be heard together.

CAMPHORATED OIL.

At the Ashford County Sessions on July 24, Allan Treadaway, drug-vendor, Ashford, was summoned for selling camphorated oil which, on analysis, was found to be deficient in camphor to the extent of 76 per cent., it having been compounded with mineral oil instead of olive oil. Defendant pleaded that he bought the oil, as being according to the standard of the B.P., from a firm at Battersea. A fine of 2s. and 10s. 6d. costs was imposed.

SEIDLITZ POWDERS.

At New Swindon Petty Sessions, on July 20, Messrs. Bell, Sons & Co., 33 and 37 Lydia Ann Street, Liverpool, were summoned for applying a false trade description to certain seidlitz powders supplied to Mr. James Lord, drysalter, Wootton Bassett, in January last. Mr. Lord was also summoned for selling seidlitz powders of deficient strength on May 30. The defence pleaded by Mr. Lord was that the powders were sold by him in exactly the same condition as received from Messrs. Bell & Co. He was fined 1s. and 10s. 6d. costs. The summons against Messrs. Bell & Co. was adjourned in order that it might be re-issued against the members of the firm and not against the company.

HARRIET UPTON, grocer, of Devonshire Road, Chiswick, was summoned at Brentford, on July 21, for having sold a seidlitz powder deficient in tartaric acid to the extent of 68.8 per cent., and in bicarbonate of soda to the extent of 15 per cent. There was a second charge, for selling a compound liquorice powder deficient in sulphur to the extent of 70 per cent. The defence was that the powders were sold as they were received from the wholesale maker. Mr. Bevan, county analyst, said he had made a special analysis of the seidlitz powder. The spelling of the word *Pharmacopœia* on the label "*Pharmiscopœia*," he considered intentional. The label also stated that the powders were "exceptionally strong"—they were exceptionally weak. Mr. Taylor, the inspector, said he must ask for a conviction in order that he might be able to take proceedings against the wholesale dealer. A fine of 5l. and costs was imposed with regard to the seidlitz powder, and one of a guinea and costs in respect to the liquorice powder.

MAGNESIA.

At Swadlincote on July 23, Arthur Mitchell Carr, chemist, of Gresley, was summoned for selling 4 oz. of heavy magnesia to the prejudice of the purchaser, in that it consisted entirely of carbonate of magnesia. Defendant pleaded guilty. Captain Sandys, who prosecuted, said that carbonate of magnesia would cost 3s., and heavy magnesia 10s. Defendant gave evidence to the effect that he had been in business over forty years. There were two substances in the trade known as heavy magnesia. He supplied a special substance known to the trade. Unless specially asked he would supply that. There were two prices, but the medicinal properties were exactly the same. Captain Sandys, however, told the Bench that

there were not two heavy magnesias in the new British Pharmacopœia. Defendant's solicitor, having been shown the new B.P., said he must plead guilty. The Bench imposed a penalty of 10s. 6d., including costs, refusing the analyst's fees.

Mr. NORMAN HITCHCOCK, grocer, Hook, Lydiard Tregoze, was summoned at New Swindon County Petty Sessions, on July 20, for selling carbonate of magnesia when pure magnesia was asked for. Inspector Smith, who proved the purchase of four packets of magnesia at the defendant's shop on May 30, stated that he asked for pure magnesia, but instead of receiving magnesia oxide he was supplied with magnesia carbonate. For the defence, it was admitted that technically there had been an offence but morally there had not, as the defendant did not know the difference between the properties. The Bench held the same view, and imposed a fine of 1s., with 10s. costs.

Bankruptcies and Failures.

Re W. T. H. ROWLSTONE, Mincing Lane, E.C., Agent for West India Produce.

THIS bankrupt failed in March last, with liabilities 555l., and assets from which nothing has yet been realised. He applied last Tuesday to Mr. Registrar Linklater at the London Bankruptcy Court for order of discharge, which was granted, the order to take effect when the creditors received 10s. in the pound.

Re HARRY BENTINCK BUDD, Charters Towers, Lingfield, Surrey, late Director of the Celladema Company (Limited).

THE adjourned public examination of this debtor was held at Tunbridge Wells on Monday, before Mr. Registrar Stone.

Mr. Greenwood, in the absence of Mr. Turrell, barrister, said he represented the trustee (Mr. F. W. Davis) that day. The accounts had not been filed according to the order of May 9, but before any further adjournment was agreed upon he should like to ask the debtor a few questions of a pressing nature.

Mr. Mackintosh, barrister, again represented the debtor. He said the difference between them was not very large, and the creditors would probably be paid in full. Since the last sitting of the Court certain sums of money had been discovered lying to the credit of Mr. Budd at the Bank of England, these amounts having been hitherto unknown. The money represented thousands of pounds, and he suggested that a conference between the parties should be held at his chambers, which would probably avoid further litigation. Mr. Budd was there, as he always had been at the sittings of the Court, and he had no doubt the whole thing could be settled before the Long Vacation.

Mr. Britton, Deputy Official Receiver, said he had no objection to this course, but he should like Mr. Greenwood to have the opportunity of putting a few questions to Mr. Budd that day.

The Registrar assenting, Mr. Greenwood at once proceeded with his questions, which were about a gold watch left to debtor by his father, and which, he stated, he had made over to his son two years ago. A gold chain and pendant also came into the questioning, and debtor's answers were so much of the Scotch character that Mr. Greenwood asked the Registrar if they were proper answers, and the debtor interrupted by stating, "We will send you a gold watch. There's no doubt about it."

The Registrar rebuked the debtor, and the examination was resumed, debtor's housekeeping being dealt with, and this time he apologised for the rudeness of his replies, which were unsatisfactory to the end.

The Registrar finally made an order that the accounts be filed by September 1, and that the case be adjourned till October 13, with a view of an application being made to the Judge for the committal of the debtor for contempt in improperly answering questions.

Gazette.

PARTNERSHIPS DISSOLVED.

Harvey, W. G., and Peak, W. F., under the style of Harvey & Peak, Charing Cross Road, W.C., scientific-instrument manufacturers.

Peckover, C. E., and Haines, C. F., under the firm of Peckover & Haines, Worthing, surgeon-dentists.

THE BANKRUPTCY ACTS, 1883 AND 1890.

ADJUDICATION.

Moseley, David, Halesowen, mineral-water manufacturer, late licensed victualler.

ORDER MADE ON APPLICATION FOR DISCHARGE.

Concannon, Austin, Stockport, physician and surgeon—discharge granted.

New Companies & Company News.

AMERICAN TOOTH AND CROWN DEPÔT (LIMITED)—Capital 2,000*l.*, in 1*l.* shares. Objects: To manufacture and deal in artificial teeth, dental apparatus, and dental mechanics' sundries. Table A mainly applies. Registered office, 41 Marke Street, Manchester.

EMMABURG (LIMITED)—Capital 2,000*l.*, in 1*l.* shares. Objects: To carry on the business of mineral-spring proprietors, and makers of and dealers in mineral, aerated, and other natural or artificial waters. Qualification, 200*l.* Remuneration, as fixed by the company.

TOUZEAU PARRIS & Co (LIMITED)—Capital 5,000*l.*, in 1*l.* shares (2,000 preference). Objects: To adopt an agreement with Touzeau Parris, and to carry on the business of confectioners, gelatin-makers, chemists, druggists, grocers, chemists' sundriesmen, &c. The first directors are:—T. Parris, of Enfield Works, Acton, W., gelatin-manufacturer (managing director); C. W. Smelt, of L and S. W. Bank, Chiswick, bank manager; and E. C. Rawlings, of 4 Rivercourt Road, Hammersmith, W., solicitor.

ASHWORTH & Co. (LIMITED)—Capital 1,000*l.*, in 1*l.* shares. Objects: To acquire the business carried on by E. Ashworth as "Ashworth & Co.," at Heywood, Lancs, and to carry on business as chemists, druggists, patent-medicine vendors, herbalists, &c. The subscribers are:—E. Ashworth, patent-medicine vendor, and Mary H. Ashworth, housekeeper, both of 34 Manchester Street, Heywood; J. Howarth, drng-dealer, Sarah Howarth, confectioner, and S. C. Howarth, chemist's assistant, all of 467 Edenfield Road, Norden; E. Holt, 11 Manning Road, St. Luke's, Southport; and Z. Howarth, 24 Queen Street, Shaw, Lancs, drug-stores manager. Registered without articles of association. Office, 34 Manchester Street, Heywood, Lancs.

MORRIS BROTHERS (LIMITED)—Capital 1,000*l.*, in 1*l.* shares. Objects: To carry on the business of chemists, druggists, patent-medicine vendors, grocers, drysalters, cilmn, &c. The subscribers are:—L. L. Morris, 59 Hungerford Road, N., printer's manager; Wm. Morris, chemist's manager, and Mrs. J. A. Morris, 25 Chapel Street, Chorley; F. W. Treadaway, traveller, and Mrs. A. M. Treadaway, 55 Webb Street, Liverpool; J. G. Tingham, 109 Beaufort Street, Liverpool, chemist's assistant; and Edward Davies, 38 Berry Street, Liverpool, grocer's manager. Registered without articles of association. William Morris is the managing director. Registered office, 25 Chapel Street, Chorley, Lancs.

HEARON, SQUIRE & FRANCIS (LIMITED)—Capital 70,000*l.*, in 1*l.* shares (35,000 preference). Objects: To adopt an agreement with G. B. and W. H. Francis, and to carry on the business of manufacturing chemists, wholesale druggists, rectifiers, distillers, and refiners of essences, essential oils, and perfumes, brewers' chemists, mineral-water manufacturers, &c. The subscribers are:—G. B. Francis, wholesale druggist; W. H. Francis, wholesale druggist; W. A. H. Naylor, chemist; R. J. Reynolds, wholesale druggist; J. B. Ridgwell, wholesale druggist; W. J. Rogerson, wholesale druggist; and R. Sharrah, traveller, all of 38 Southwark Street, S.E. The first directors are G. B. Francis (chair-

man), W. H. Francis, W. A. H. Naylor, R. J. Reynolds, J. B. Ridgwell, W. J. Rogerson, and R. Sharrah. G. B. and W. H. Francis are joint managing directors, with 800*l.* per annum, divisible, and may retain office so long as they each hold 3,000 ordinary shares. [Messrs. Hearon, Squire & Francis have issued a circular, in which they say they have converted their business into a private limited-liability company as from June 30 last, and that no shares will be offered to the public or the trade. The directors, who will all take an active part in the management, will be Messrs. G. Bult Francis (chairman) and W. H. Francis, the late partners, together with Messrs. W. A. H. Naylor, R. J. Reynolds, J. B. Ridgwell, W. J. Rogerson, and R. Sharrah. Each of these latter gentlemen is widely known in the trade, and all have for many years been intimately associated with the business.]

BOVRIL (LIMITED)—The directors have resolved to distribute an interim dividend of 5½ per cent. on the preference and 7 per cent. on the ordinary shares per annum respectively. Warrants will be posted on August 10.

THE MAYPOLE COMPANY announce that the meeting of shareholders called for July 27 has been postponed until July 31, at the Holborn Restaurant, at 2.30 P.M. The alteration in the date has been made in consequence of notices of the original meeting not having been sent to some of the shareholders.

THE DISTILLERS' COMPANY (LIMITED)—At the ordinary general meeting held in Edinburgh on July 20 a dividend was declared of 10 per cent., but the directors were unable to recommend the bonus of 5*s.* which was introduced in 1897 and continued last year. The diminution of profits this year has not arisen from any falling-off in the volume of trade, but is the result of increased prices for grain, coals, and other material, and, to a smaller extent, through losses in connection with the failure of Pattisons (Limited).

PRICE'S PATENT CANDLE COMPANY (LIMITED) announce an interim dividend for the past half-year of 1*s.* per share, or 3*s.* higher than that paid twelve months ago. The satisfactory showing in the last annual report was attributed to economies resulting from improvements in plant and processes, and to the exceptionally low prices of raw materials. These favourable influences would appear to have continued in even more beneficial degree, and the accounts for the half-year ended June 30 show a profit of about 44,800*l.*, subject to audit.

MAYPOLE SOAP COMPANY (LIMITED)—The petition of Messrs. F. Waller & Co. for the winding-up of the Maypole Soap Company (Limited) was down for hearing before Mr. Justice Wright in the Winding-up Court on Wednesday. Mr. Ingpen, Q.C., said it was a creditors' petition. A meeting of the shareholders had been convened for July 31 for the purpose of reconstruction. There were various proposals to be made, and it was generally thought in the interests of the creditors that, with his Lordship's consent, the petition might stand over in order to see if the reconstruction could take place. He therefore suggested that it should stand over until after the Long Vacation. Mr. Upjohn said he appeared for the company, and did not object. Mr. Morgan said he appeared for Messrs. Cook & Co., and he objected. Mr. Ingpen said the claim of these creditors had been submitted to arbitration. Mr. Morgan said the arbitration was pending. Their debt arose as long ago as May of last year. After considerable delay the company suggested that they had a claim against them in regard to certain soap which they manufactured for them, but which was not manufactured according to the directions. The company consequently set up a counter-claim, and offered a cheque for the balance, which his clients declined to accept. Under a clause in the agreement they appointed an arbitrator to settle the matter in dispute. The company also appointed an arbitrator, and the two arbitrators appointed an umpire, and the final sitting was held last week. The arbitration was then adjourned until the hearing of this petition. The proposal for the petition to stand over until the next sitting made a great difference, as his clients were anxious that something should be done with regard to their account, which was for some 1,100*l.* His Lordship granted the adjournment, the arbitration to proceed in the meantime.

Pharmaceutical Society of Great Britain.

JULY EXAMINATIONS.

THE Board of Examiners for England and Wales concluded their summer session last week. In the course of it they had for the Major examination 32 candidates, of whom 15 failed and the following 17 passed:—

Bennett, Charles Thomas
Bunting, Sydney
Clarke, Frederick Stanley
Evans, John
Fisher, Sidney Ralph P.
Forster, William
Garbett, Charles
Hirst, Frederick Beaumont
Hyde, Charles

Livesey, Henry Ayrton A.
Meadley, George Holmes
Millidge, Philip Henry
Pattison, George
Thackray, Charles Frederick
Vallet, Cyril Edward Fraaklin
Wheeler, Alice Maud
Wild, Thomas Jabez

MINOR EXAMINATION.

In this 449 candidates were examined, and 317 failed. There passed 132, viz.:—

Aitken, Robert Douglas
Andress, Richard
Appleyard, Charles Percival
Baker, Cyril Henry
Baker, George Bertram
Barley, Maurice Arthur Hurd
Bathurst, Ernest Frank
Bell, Frederick Alexander
Bell, William Austin
Beveridge, Charles Ernest
Beynon, John Thomas
Birt, Henry
Bloor, Richard Hardy
Bonello, Francis
Boon, John Harold
Bowden, Harry Drysdale
Brown, Joseph Winspear
Bryan, Howard William
Buckingham, Frank Edward
Butler, John Howard
Buxton, Arthur
Cable, Alice Mildred
Carter, Charles Edward
Chafer, James William
Chapman, Herbert
Clarke, Henry Pitman
Clegg, Harry Brook
Coleman, Joseph
Corlett, Thomas Henry
Corrall, George Frederick
Cowburn, Joseph R.
Cowling, Ernest
Davies, David Morgan
Davies, Harry
Davies, Thomas Timothy
Davies, William Osborne
Davies, William Oswal
Dearden, Theodore Ernest
Deck, Reginald
Derbyshire, Charles Henry
Doughton, Samuel Davies
Evans, David Harries
French, George Walker
Gair, Duncan
Glasspool, Alfred George
Gower, Herbert Charles Alfred
Gray, Percy Bunting
Green, John Holt
Griffiths, Edwin
Harger, Clement
Harmer, George Clayton
Harris, John
Hawkins, Philip
Hewlett, Sydenham Arthur
Hill, Thomas
Hobbs, Henry Allmond
Hughes, Richard Osborne
James, William Alfred
Jesson, Albert Robert
Jones, Henry Humphreys
Jones, Hugh James
Lane, Sidney William

Latham, Frank
Lee, Arthur
Legge, Harry George Bernard
Lenton, Walter Henry
Lewis, Arthur Willie
Livesey, George Samuel T.
Llewellyn, David Lewis
Lloyd, Gwilym Henry
Long, Edward Frank
McBryde, James
McGhie, John Knowles
McIntyre, George
Maddison, Edwin Robson
Maddison, Thomas William
Manning, Frederick William
Marchant, Walter Sawyer
Martin, Edwin George
Meakins, John James
Miner, William Harold
Morgan, Howell
Normansell, John William
Norris, Harold
Oddy, Herbert
Owen, William Hibbert
Padwick, Kingsley John
Panchaud, Frederick
Patridge, Ernest William
Pettifer, Frank
Pickles, Frank
Pinchen, Colin George
Pratt, Leonard Dudley
Prebble, Ernest
Pyman, Frank
Redpath, Stanley
Roberts, Arnold
Robinson, John George
Rogers, Edward Wilson
Ruoff, Francis Hermann
Saunders, Charles Barnard
Schneider, Edward Paul
Scholefield, William Edward
Shearman, Christopher William
Slatter, Wilfrid Thomas
Snook, John Francis
Sparrow, Arthur Barrington
Spillman, John James
Spoonor, William Cushing
Stone, George
Stones, William Henry
Sutcliffe, William
Tasker, Dudley Bayzand
Taylor, Emma Bennett
Taylor, George Alan
Thomas, William John
Thompson, Edgar Joseph
Tilley, Ernest Alfred
Trick, Percival William C.
Turner, Andrew Harper
Twigg, John George
Waterhouse, Frederick Herbert
Watkins, Alfred
Weiss, Richard

Whitworth, Arthur Upsall
Wigglesworth, James William
Wigglesworth, William
Williams, David John

Williams, William Thomas
Wilson, William Mathew
Woodall, Robert Thomas
Woollatt, Percy Charles

MODIFIED EXAMINATION.

Henry Knight was examined and passed.

The Farewell Song of the Bloomsbury Student.

At length the session's over; we're hurrying from the Square,
And fleeing to the country for exercise and air.
Farewell, thou Laboratory dear; beloved Lecture-room:
We're on the move from Bloomsbury to go where berries bloom.

We've packed our apparatus out of sight and out of mind,
We've no retort remaining but of the courteous kind;
We've taken off our aprons, and we're letting them go hang,
And we've closed our priceless text-books with a relish and a bang.

Attfield's a mighty book; both Bower and Green our praise doth claim;
But now at fields less erudite, and bowers more green we aim:
Helped by wise saws and Ince-tances, we've struggled through the Meyer,
And we go to make Companions of many a rustic Squire.

Farewell, ye complex powders, the cause of many a frown;
Ye troublesome precipitates, that never would come down;
Ye puzzles volumetric: far from you we will range,
And try for just a month or two a substitution change.

And when great Sol, in August wrath, from photosphere and core,
Caloric pours on ev'ry fold, unfolding ev'ry pore,
We'll rest on drying specimens of *Graminaceæ*
And swallow ripe *eterios* with saccharum, P.B.

Then as the mighty piston moves and whirls us far away,
And bricks and mortar sink from sight, and hedgerows line the way,
With spirits all ebullient, to ev'ry hill and moor
Throughout the glorious country we'll proclaim the session's o'er.

SYRUPUS.

TRINIDAD ANALYST'S REPORT.—The annual report of Mr. P. Carmody, F.I.C., F.O.S., the Trinidad Government Analyst, states that during 1898 no fewer than 1,213 samples were analysed. Of these, 120 were samples of the ganja-plant, being an increase in number, and it is evident, says the report, that the smuggling-trade in this article continues. The total prohibition of a trade so largely in demand by a certain class of the population must always be a matter of the greatest difficulty. In the samples of petroleum which were analysed the flash-point was found to be above the limit, with one exception. As far as the requirements of the new Ordinance are concerned, says the report, the difficulties anticipated by a few leading members of the mercantile community have not been experienced, and a much safer oil is now being used in the colony without any increase in the retail price. In the Educational Department the usual courses of instruction in theoretical and practical chemistry were attended during the year by eighty-five students. In 1891 an experiment in industrial education was begun. Since then ten students have availed themselves of the opportunities offered. At the laboratory the students were given soils, manures, and agricultural products to analyse, and a nominal charge was made of 10s. a month to cover the cost of chemicals and apparatus. Many of the students have acquired a sound knowledge of agricultural chemistry, and others have markedly improved. The numerical results are satisfactory, for no applications had been invited, and some had to be refused. The scheme is, in Mr. Carmody's opinion, one upon which the Government can safely base a larger scheme of industrial education.



THE GREAT WESTERN RAILWAY COMPANY, with a lordly indifference to the nature of the Pharmaceutical Conference, classified it on the tickets as a "Picnic Pleasure-party." It is probable that the railway officials know that everybody who goes to the West Country has a good time of it, so proverbial has Devonian hospitality become; and certainly the reception accorded to the members of the Conference bore out this assumption.

THE CAMPAIGN was opened at the Assembly Rooms, Royal Hotel, on Monday evening, under the most favourable auspices. The weather was all that could be desired, and the turn-out was numerous, brilliant, and full of good fellowship. Between two and three hundred guests assembled to shake hands with Mr. and Mrs. J. C. C. Payne, and incidentally with one another, and the brightest hopes were entertained on all sides as to the success of the Conference. Besides pharmacy proper, the Mayor and Mayoress of Plymouth, the Mayor of Devonport, and the Chairman of the District Council of Stonehouse came to do honour to pharmacy. An orchestra, composed of eight members of the Band of the Royal Marines, discoursed excellent music, and trios, duets, and solos were very well rendered by Miss Maud Stephens, Messrs. J. Skelton, T. W. Balhatchet, and Major Rendle, V.D. Two delightful violin solos by Miss Lily Dyke and an exceptionally well-played cornet solo (which was enthusiastically encored) by Sergeant Ough were amongst the instrumental selections.

With the music gently stealing
Through the palms in tiny trills,
Quoth the pharmacist, with feeling,
"Better this than making pills."

In an ante-room were exhibits of marine biology, by Mr. T. V. Hodgson; botanical sections, by Mr. O. Reade; several fine microscopical examples of plant-structure, by Mr. Davy Turney; and of local *Foraminifera*, by Mr. Hansford Worth. Mr. Worth was also calculating out intricate problems with a new calculating-machine. There was an exhibition of Ives's Kromskop.

OUR REPORT of the serious part of the Conference meeting begins on page 197.

AFTER the arduous opening proceedings and the vigorous Attfieldian defence of the B.P., members were regaled at the Corn Exchange with an excellent cold luncheon. The

large hall was nicely decorated, and everyone seemed well-disposed towards one another and towards the Devonshire viands provided. The President was in the chair, and made some genial remarks now and then which kept the fun going. Mr. Davy Turney urged members and their lady friends not to forget the Looe excursion and the photograph of the morrow.

The luncheon at the Corn Exchange,
Few pharmacists did funk it;
They happy seemed with Devon fare—
The Cider, Cream, and Junket.

THE EXCURSION ON TUESDAY EVENING was from Millbay Pier along the Cornish coast to the quaint old port of Looe, described by Wilkie Collins as "one of the prettiest and most primitive places in England." Its primitiveness, so to speak, has somewhat worn off since the famous novelist wrote of it, but it is still very old-world and interesting, and beautifully situated in a cosy corner of the coast. Close by are such historic sights as the Cheesewring, a pile of granite slabs on the summit of a bouldery hill, and a large cromlech, Trevethy Stone. Westward of Looe is the famous village of St. Neot. The sail was much enjoyed, and tea was served on board.

The rugged crags of the Cornish coasts
To our eyes were strange and new,
And we praised the thought of our kindly hosts
For the sight of that quaint old Looe.

ON Wednesday morning a photograph of the members attending the Conference was taken, with the Guildhall Buildings as a background. Although the party assembled a quarter before ten, some encroachment on the time of the Conference Session took place.

OTHER functions which took place on Wednesday were midday luncheon in the Corn Exchange, tea in the Royal Hotel Assembly Rooms—which have been at the disposal of the members for the last two days—and a ladies' concert and smoking-concert, with dancing to wind up, in the evening.

THE THURSDAY MORNING EXCURSION to Mount Edgumbe (which is the picture at the head of this section) was one of the events which everybody was looking forward to.

Mount Edgcumbe occupies a peninsula to the west of Plymouth Sound, and rises from the edge of the water up to an altitude of 400 feet. It is in Cornwall, and is covered with woods and park-like lands in which a herd of deer roam, whilst about half-way up the slope the mansion of the Earl of Mount-Edgcumbe is placed. The grounds are open to the public on one day in each week, but special permission was obtained for the Conferencers for their visit on Thursday. The house, which is not open to the public, is well designed, if not magnificent, and was begun in Elizabeth's reign. It is chiefly noted for its many Reynolds portraits and associations with royalty, who have often been entertained there. The members left the Promenade Pier at 9.30 and landed at Cremyll Beach, the nearest landing-place to the principal entrance to the park. An avenue of trees is traversed on entering the grounds, and by the side of the gardener's house an arched gateway leads to the ancient ornamental gardens, which are not open to the public. In one part of the extensive grounds there are some architectural remains, known as the Ruins, built out of some old carved granite, and the remains of an obelisk. From the elevated spot where the Ruins stand beautiful views of the surrounding country can be obtained. In another part of the grounds there is a little temple, dedicated to Milton, erected by a former Earl and admirer of the poet. A tablet on the wall quotes the following appropriate stanza:—

Overhead upgrew
Insurpassable height of loftiest shade,
Cedar and fir and pine and branching palm,
A sylvan scene; and as the ranks ascend,
Shade upon shade, a woody theatre
Of stateliest view.

Just outside the boundary of the park Maker Church claims attention. Some weird tales are told of a former Countess of Mount-Edgcumbe, who, buried in a trance, was awakened

and so forth. In its waters are moored various old three-deckers, used as training-ships, torpedo-ships and destroyers, with the guardship *Devastation* at the entrance: she



THURSDAY'S EXCURSION

Was up the River Tamar, of which this is a bit
(Worwell Rocks) at Weir Head.

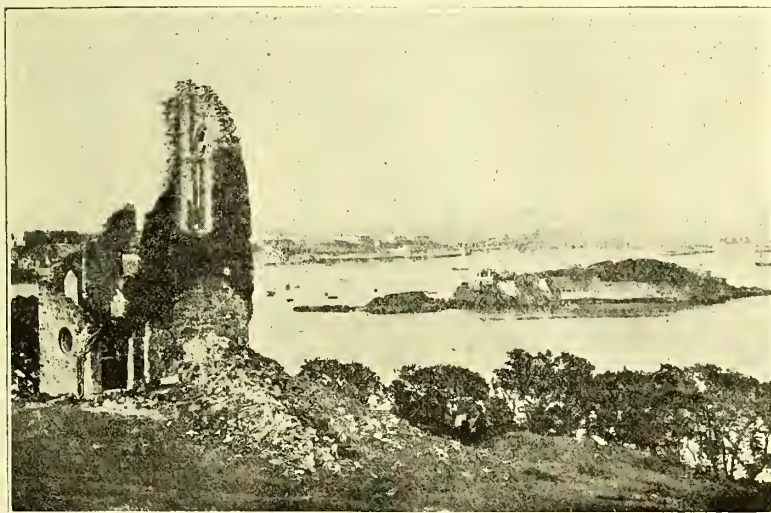
Hamoaze being one of the greatest naval anchorages of the world. On the opposite bank the beautiful grounds of Mount-Edgcumbe, which have just been inspected, are passed. Passing under Saltash Bridge, St. Budeaux Church is seen on the right bank, "where Sir Francis Drake married his second wife," we are told. Pentillie Castle, the grounds of which are visited by the party, rises abruptly from the water's edge on the left bank, and opposite is Cothell House, a splendid example of the Tudor fortified mansion, surrounded with trees, and the ancient seat of the Mount-Edgumbes.

* * * *

FRIDAY'S PROCEEDINGS begin with a visit to Devonport Dockyard. This dockyard, which was founded 208 years ago by William III., now covers (with its adjoining smitheries, stores, &c.) an area of about 100 acres. Five thousand men are employed here, but the place has avenues of trees, and at first entering the general air of quiet and orderliness is not suggestive to the casual visitor of the warlike work which is being carried on. In the fire-engine house is a collection of many of the figureheads of vessels engaged in several of the battles of last century, some being most quaint and amusing. The clangour in the smithery, where the Nasmyth steam-hammer may be seen at work, and in some of the other workshops, is deafening, and for relief we flee to the King's Hill, where, on a mound surrounded by flowers, a pavilion is erected. This pleasant, quiet spot amidst such a scene of activity is, it is said, the outcome of a visit of George III., who was so pleased with the prospect obtained from that particular mound that he requested that the pavilion should remain. A tunnel, half a mile long, connects the Devonport yard with a modern yard and steam-factory at Keyham, and also with the gun-wharf, which was built, 1718-25, from designs by Sir James Vanbrugh. The traffic between the establishments is thus conducted without passing through the streets.

* * * *

ONE OF THE CHIEF SOCIAL FUNCTIONS of the Conference will be the garden-party to be given by the Mayor of Plymouth (Alderman John Pethick) on Friday, at Down Park, Yelverton. Yelverton is a bracing spot on the fringe of Dartmoor, and, although fourteen miles from Plymouth, may almost be reckoned a suburb, so many Plymouthians having country houses there. The Mayor has issued 1,500 invita-



THURSDAY'S EXCURSION.

Ruins at Mount-Edgcumbe Park, with Drake's Island to the Right.

by the sexton, who thought to possess himself of a ring she wore. An old man who was murdered while attending the signals on the church-tower is said to still haunt the neighbourhood. Re-embarking at Cremyll Beach, the visitors were soon landed at the Pier, where luncheon was ready for serving.

* * * *

AFTER LUNCHEON AND SPEECHES in the Pier Pavilion steamer-trip in Plymouth Sound, through the Hamoaze, and up the Tamar was the programme. Providing the tide be favourable daily trips are made by steamers as far as the Weir Head, twenty-one miles from Plymouth, with the Worwell Rocks (shown in the illustration) rising almost precipitously 400 feet out of the water. About four miles of one bank of the Hamoaze is occupied by Government establishments — dockyards, Royal Naval Engineers' College,

tions for Friday. It is proposed to take the Conference party by brakes, the route being through Bickleigh, noted for its picturesque scenery. The return journey is to be varied by a visit to Borington Park and Plympton. The latter, although now but a village, before 1832 sent two members to Parliament, Sir Christopher Wren being a former representative. Sir Joshua Reynolds was born here, and in the church of St. Mary are monuments to various members of the Strode family. William Strode was one of the five members Charles I. impeached, and whom he went to the House of Commons to arrest.

* * * *

VISITORS TO THE CONFERENCE had the privilege of admission to an exhibition of oil-paintings and water-colour drawings in the Devon and Cornwall Galleries, George Street. This was a nice little affair, with some striking pictures (principally of scenes and scenery in Devonshire and Cornwall) by R.A.'s, R.I.'s, R.B.A.'s, and R.A.A.S.'s. The only picture we noted with anything approaching pharmaceutical interest was a "Study of Eucalypti Lawson," by Mrs. R. S. Tucker. There were many delightful things to be seen there, however, to gladden the heart of the artistic pharmacist. The rich verdure of the Devon moorlands will linger as purple patches in his memory, and the

Craggs, knolls, and mounds confusedly hurled—
The fragments of an earlier world

—an impressive piece of work by Brittan—will not be easily forgotten.

* * * *

THE LADY-VISITORS, of whom there were not a few, were well looked after by the local Ladies' Committee, consisting of Mesdames Barge, Geo Breeze, A. D. Breeze, Cocks, Hunt, Condy, U'Ren, W. H. Woods (Hon. Sec.), and Mesdemoiselles Roper, Turney, and Weary. Parties were taken to visit the various places of interest in Plymouth and Devonport. Excursions by train and steamer were arranged, and the Marine Biological Laboratory and the Plymouthian shops came in for a considerable share of attention.

With a lingering look,
As the Pilgrims took,
We gazed on the Fisher's Nose,
And a kind regard
We bent on The Hard
At the peaceful twilight's close;
And we sigh, for fain
Would we gaze again
On The Hoe and the still Hamoaze.

* * * *

THE *Times* has blundered once more in regard to the Conference. On Wednesday, in a fill-up paragraph reporting the opening of the meeting, it described the affair as the "British Pharmaceutical Society of Great Britain." We had credited the *Times* with more common sense than to perpetrate that redundancy; but perhaps the Irish President has led our contemporary to imagine that there may be such a thing as an Irish Pharmaceutical Society of Great Britain.

Methylated Spirit.

Government Methods of Examining Wood-naphtha.

THE Excise Department of the Inland Revenue have issued a detailed account of the method followed in the Government Laboratory in the examination of wood-naphtha intended to be used in making methylated spirit. The following are the methods:—

Bromine Decolorisation.—To make standard bromine solution dissolve 12.406 grammes of potassium bromide and 3.481 grammes of potassium bromate in a litre of recently-boiled distilled water. Fifty c.c. of this solution (= 0.5 gramme bromine) is placed in a well-stoppered flask of about 200 c.c. capacity. Add 10 c.c. of sulphuric acid (1 in 4) and shake gently. After standing a few minutes, run the wood-naphtha slowly from a burette into the bromine solution until the latter is completely decolorised. Not more than 30 c.c. of the wood-naphtha should be required.

Methyl-orange Alkalinity-test.—The naphtha should be faintly acid to phenolphthalein, slightly alkaline or neutral,

rarely acid to litmus, and always alkaline to methyl orange. To ascertain this place 25 c.c. of the naphtha in each of two beakers, and titrate with decinormal acid, with litmus in one beaker and methyl orange in the other. With litmus usually 0.1 to 0.2 c.c. of decinormal acid is required to neutralise. With methyl orange the total alkalinity should be greater, at least 5 or 6 c.c. of decinormal acid being required for neutralisation. The total alkalinity, less that given with litmus, is the "methyl-orange alkalinity," and, for the 25 c.c. of wood-spirit, should not be less than is required to neutralise 5 c.c. of decinormal acid.

Estimation of Methyl Alcohol.—Twenty-two grammes of coarsely-powdered iodine and 5 c.c. of distilled water are placed in a small flask and cooled in ice-cold water. Then 5 c.c. of the wood-spirit (60° O.P.) is added, the flask corked, the contents gently shaken, and allowed to remain in the ice-cold bath for ten to fifteen minutes. When well cooled 2 grammes of red phosphorus is added to the flask contents, and the flask immediately attached to a reflux condenser. The reaction soon commences, and must be moderated by dipping the flask into a cold-water bath. (Spirit may be lost if the reaction is too violent.) After about fifteen to twenty minutes, when all action appears to have ceased, the water-bath under the flask is gradually heated to a temperature of about 75° C. (167° F.), and the flask being occasionally shaken is allowed to remain at this temperature for fifteen to twenty minutes. The source of heat is then removed and the apparatus left for an hour till it has cooled, when the condenser is reversed, and the methyl iodide slowly distilled off—first at a low temperature—the bath being allowed to boil towards the end of the operation only. The end of the condenser dips into water in a measuring-tube, and the iodide is collected under water and measured at a temperature of 15.5° C. (60° F.). The percentage (by volume) is found from the formula:—

$$\frac{\text{c.c. methyl iodide found} \times 647 \times 100}{\text{c.c. wood-spirit taken}} = \left\{ \begin{array}{l} \text{percentage (by volume)} \\ \text{of methyl alcohol.} \end{array} \right.$$

Or when 5 c.c. of spirit is taken:—

$$\text{c.c. methyl iodide} \times 12.94 = \text{percentage (by volume).}$$

Esters and acetals, &c., also yield methyl iodide by this process, and the amount of them present must be deducted from the amount of the methyl alcohol obtained; but as methyl acetate is the only compound usually found in quantity sufficient to effect the results materially, it is recommended that the grounds of methyl acetate per 100 c.c. of spirit multiplied by 0.5405 will give the equivalent of methyl alcohol to be deducted from the total percentage by volume calculated from the methyl iodide found.

The Acetone Reaction.—To perform this, 25 c.c. of normal soda is placed in a flask similar to that used in the bromine reaction, add 0.5 c.c. of the naphtha, shake, and, after standing five to ten minutes, run in about 5 c.c. iodine solution slowly, vigorously shake until the upper layer, by standing a minute, becomes quite clear, then add a few more c.c. of iodine solution, as at least 25 per cent of iodine in excess must be added. After shaking, the mixture is allowed to stand for ten to fifteen minutes, and then 25 c.c. normal sulphuric acid is added. The excess of iodine is titrated with n/10 sodium-thiosulphate solution and starch, and half the number of c.c. of thiosulphate solution used is deducted from the total number of c.c. of iodine solution used. The difference gives the amount of acetone by weight in the naphtha by the formula:—

$$\frac{\text{c.c. n/5 iodine solution required} \times 3876}{\text{acetone per 100 c.c. of wood-naphtha.}}$$

This includes as acetone any aldehydes, &c., capable of yielding iodoform by this reaction. If the quantity of "acetone" is excessive, a less quantity of the spirit is taken, or 10 c.c. is diluted with 10 c.c. of methyl alcohol free from acetone, and 0.5 c.c. of the mixture is used.

Estimation of Esters.—Five c.c. of the wood-naphtha is run into a silver pressure-flask of about 150 c.c. capacity with 20 c.c. of recently-boiled distilled water. Ten c.c. of normal-soda solution is added, the flask securely closed, and digested for at least two hours in a water-bath at 100° C. (212° F.). The contents are then washed into a beaker, and titrated with normal acid and phenolphthalein. The difference between the number of c.c. of soda taken and of the acid required for neutralisation may be calculated as methyl acetate (weight in volume) from the formula:—

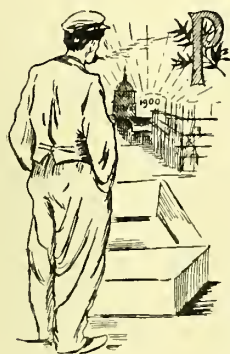
$$\frac{0.74 \times \text{c.c. soda required} \times 100}{\text{c.c. naphtha taken}} = \text{grammes per 100 c.c.}$$

Or if 5 c.c. of spirit is taken, as above:—

$$1.48 \times \text{c.c. soda required} = \text{grammes of methyl acetate per 100 c.c. of spirit.}$$

DOCTOR (angrily): "You put in something that wasn't ordered in the prescription, and now the patient is quite well." Pharmacist: "We'll, then, write your prescriptions so that they can be read."

The Paris International Exhibition of 1900.



PARISIANS are complaining a good deal just now that "the whole place is upside down" through the preparations for the Exhibition, while the visitor might almost be pardoned if he thought that the good old days of barricades had been revived. These preparations for 1900 are on a ordinary scale. The Ville-Lumière has taken M. Hanotaux's views that the means of communication within her walls are insufficient, and right through the city, from east to west, along some of the main arteries, the works of the new Paris Underground Railway obstruct traffic. Two new termini are also being

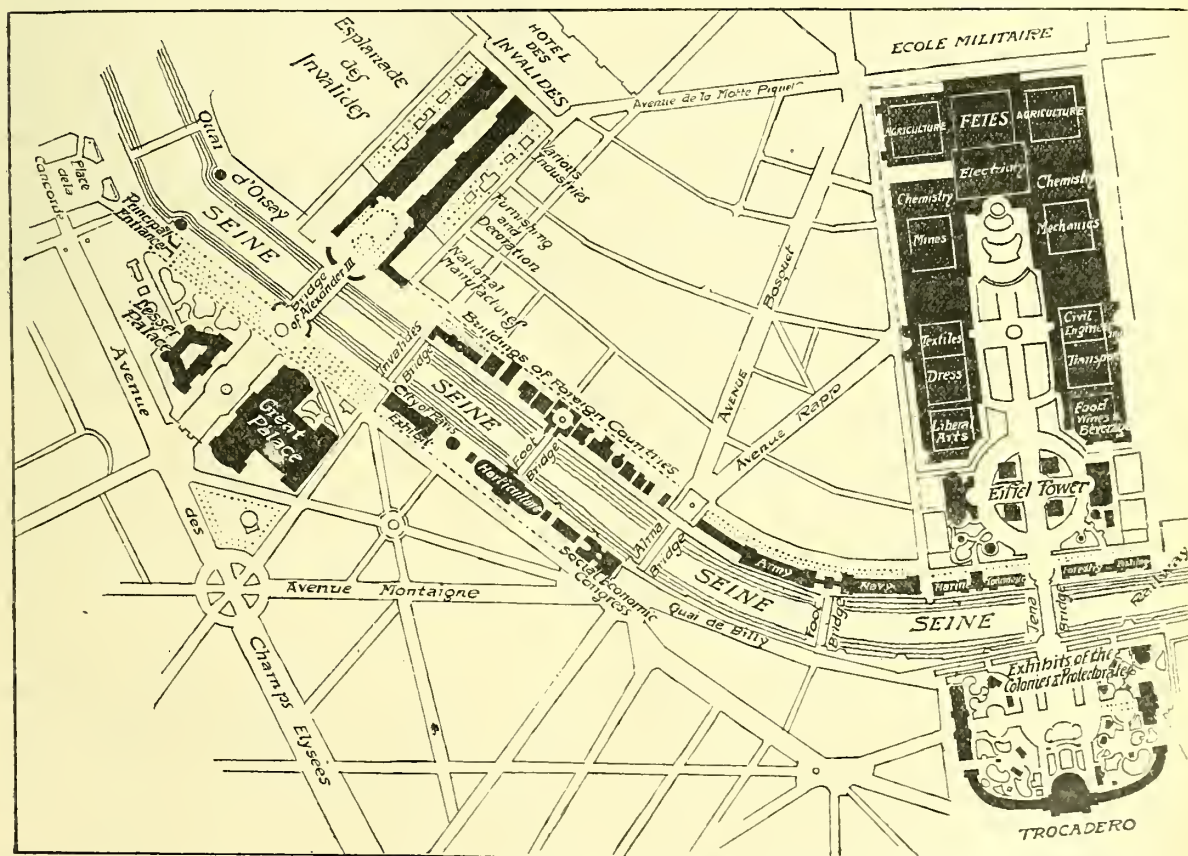
built on the Esplanade des Invalides, close to the Exhibition—one for the Western of France Railway, convenient for travellers by the Newhaven route, and the other for the Orleans line; while the P.L.M. and other lines have

the picturesque confusion; while, further on, tiny flags fluttering indicate the spaces allotted to the "pavilions" of various nations. Not the least handsome will be that placed at the disposal of the Prince of Wales during his visits. Will the neighbouring German pavilion shelter the august head of Kaiser Wilhelm in 1900? "That is the question."

It should be understood that the new Exhibition, besides the sites occupied in 1889 (Champ de Mars, Esplanade des Invalides, and Trocadero), will include a goodly portion of the Champs Elysées, and have its main entrance on the Place de la Concorde, close to the very heart of Paris. The area thus added (about 35 acres) may, perhaps, seem small, but its unique and central position, together with its architectural beauty, will make it a feature of the 1900 arrangements.

As will be seen by the sketch map, this new portion is principally devoted to the Fine Arts. The industrial exhibition will be relegated to the left bank of the Seine—the "Surrey side," as we have heard Londoners call it.

The eighteen chief groups of the exhibition are:—I., Education; II., Fine Arts; III., Literature, Science, and Arts; IV., Mechanical Processes and Machinery; V., Electricity; VI., Transport and Civil Engineering; VII., Agriculture; VIII., Horticulture and Arboriculture; IX., Forestry, Hunting, and Fishing; X., Food; XI., Mines and Metallurgy; XII., Furniture and Decoration; XIII., Textiles and Clothing; XIV., Chemical Industry; XV., Various In-



enlarged their Paris stations, and the "Girdle Railway" is being partly doubled in width. Along the Avenue de la Motte Picquet a miniature edition of the New York "elevated" railroad is in course of erection, and a movable platform will also be provided in the Exhibition for the weary pedestrian. Of steam and electric tramways, motor-cabs, and all of that ilk we see something and hear much.

The banks of the Seine present a strangely new aspect. Here, new quays are being built; there, the coming "Alexandre III." bridge already spans the river. Railway cuttings, "Old Paris," panoramas, and side-shows continue

dustries; XVI., Hygiene and Social Economy; XVII., Colonisation; XVIII., Military and Naval.

The disposition of these is shown in the sketch-map. The subdivisions of the groups which interest the drug and chemical trades are as follows:—

Group II.—Class 12.—Photographic materials, processes, and products.

Class 15.—Scientific instruments and apparatus, weights and measures of various countries.

Class 16.—Medicine and surgery. Instruments and apparatus for anatomical, histological, and bacteriological work, sterilising-

apparatus, dressings, surgical instruments and appliances, army and navy medicine-chests.

Group V.—Class 24.—Electro-chemistry. Piles and batteries, applications to industrial chemistry—*e.g.*, manufacture of soda, chlorine, and potassium chlorate.

Group VII.—Class 41.—Agricultural (non-alimentary) products. Oleaginous plants and grains, oils and fats, tannin plants, medicinal, pharmaceutical, and dyeing plants, tobacco.

Group VIII.—Class 52.—Ivory, honey, tortoiseshell, musk, castorom, civet, &c.

Class 54.—Wild plants, roots, barks, and fruits used by pharmacists, herbalists, dyers, &c.; indiarubber, gums, and resins.

Group X.—Class 55.—Aerated-water factories.

Class 56.—Farinaceous products, flours, arrowroot, starch.

Class 59.—Condiments, spices, tea, coffee, &c.

Class 61.—Artificial aerated waters, beer, cider, and other beverages.

Group XII.—Class 72.—Glassware.

Group XIV.—Class 87.—Chemical and pharmaceutical industries—(1) Laboratory-apparatus of all kinds; manufacture of chemicals, varnishes, indiarubber, oils, and pharmaceutical products; liquefaction of gases. (2) Acids, alkalies, salts, sulphur, phosphorus, ozone, oxygenised water, sea-salt, wax, soap, candles, glycerin, tars, gelatin, dyes, varnish, blacking, printing-inks, paraffin and other oils, alcohols, liquid gas, artificial textiles, rough and manufactured pharmaceuticals.

Class 89.—Perfumery—(1) Raw products. (2) Machinery and plant. (3) Manufactured products: Soap, toilet-waters, perfumed oils, pomades, scents, sachets, extracts, powder, dentifrices, toilet-vinegar, hair-dyes, rouges, &c.

Class 90.—Tobacco and matches.

The Chemical and Pharmaceutical Industries Section (Class 87) had a "committee of admission," numbering about fifty members, and was presided over by the late Professor Friedel, M. Expert Besançon being Vice-President, M. Georges Lefebvre Secretary, and M. Adrian, the well known manufacturer of pharmaceutical preparations, was "reporter." M. Adrian's report has recently been issued. It shows that six general meetings have been held. Some little friction seems to have occurred between this class and Class 115 (special products for colonial exportation). While the former was rigidly limited as to space, the latter was more liberally treated in the hopes of pushing colonial trade. Many pharmacists, therefore, preferred to apply for space in Class 115, in the hopes of more easily obtaining admission. The committee of Class 87 complained to the Assistant-Director of the Exhibition, who replied that all he could do was to rigidly exclude from Class 115 such products as seemed unsuitable for exportation.

The space allotted to chemical and pharmaceutical exhibits in 1900, though 25 per cent. larger than the area allotted to the equivalent class in 1889, is small enough to justify a certain severity in the choice of exhibits; 425 applications so far have been accepted (of these, I am informed by M. Debuchy, 120 were from pharmacists).

To facilitate work the committee was grouped into five sub-committees. The pharmacy sub-committee, No. 4, has as President M. Riche (just retired from his educational post at the Paris School of Pharmacy), and as Vice-President Professor Jungfleisch; M. Debuchy, wholesale pharmacist, of the rue Vieille-du-Temple, is the Secretary; and among the members are MM. C. Buchet (Pharmacie Centrale), de Boissieu, Chassaing, Crinon (Secretary of the General Association of French Pharmacists), Girard (the *bête noire* of the anti specialists), Hanriot, Landrin, Janret, Weber, Champigny, and Deschiens, with M. Astier (the Pharmacien-Deputy) and M. Scheurer-Kestner (the Dreyfusard Senator). These deal with alkaloids, pharmaceuticals (raw and manufactured, &c.), simple and compound medicaments, and chemical products for perfumers. The sub-committee for the Retrospective Museum of the History of Chemistry is composed of MM. Lauth, Lamy, Ferron, Collin, Landrin, Deutsch, and Marquet de Vasselot, with M. Grumet as President, and M. Debuchy as Secretary.

The sub-committee of Class 54 has asked all French pharmaceutical societies to request contributions from their members for the Retrospective Museum of Medicinal-plants, &c. Collections of herbs, drugs, materia medica, samples of indiarubber and gums, edible mushrooms, &c., will all be admitted. A "commemorative diploma" may possibly be awarded to all deserving exhibits. M. Fumouze, of Paris, is organising the exhibit.

One or two novel ideas have been proposed, which, if well carried out, will give a new character to the Exhibition. It is proposed to class by the character, and not the origin or nation of the exhibit—*i.e.*, all firms representing one business will theoretically be required to stand side by side. In practice we fancy British exhibitors will find themselves grouped first of all with kindred manufacturers from the United Kingdom, and a little further on, and possibly in a separate plot, will be their continental and Transatlantic rivals. Their French competitors will be pretty certain to be grouped apart, and in many cases will have a separate building.

Another project is, instead of grouping the machinery in motion in one vast hall, to show the processes of manufacture side by side with the finished products. The adoption of electricity as a distributor of motor-force will make this feasible. The separation of the chemistry and pharmacy in the 1889 Exhibition was unfavourably criticised, and in 1900 they will form one class. The importance of the perfume-industry in France should render the section of raw products for perfumery interesting, if not to some extent entirely a new idea.

The organisers of the Exhibition include many names well known in the pharmaceutical world. Among the members of the Committees of Admission for French Exhibits may be noted—Class 3 (Scientific Education), Senator Berthelot; Dr. Duclaux, of the Pasteur Institute; M. Planchon, Director of the Paris School of Pharmacy; and Professor Troost. Professor Moissan, of the Paris School of Pharmacy, naturally sits in the Section of Electro-chemistry, Professor Lippmann, of colour-photography fame, in the Electricity Section. In Class 54 (Medicinal Plants) are Professor Guignard, who teaches botany at the Paris School of Pharmacy, with MM. Armet de Lisle, Chevrier, Coirre, Couturiers (pharmacists and herbalists), while the active M. Fumouze is the Secretary.

The Perfumery Section was organised by Senator Chiris, MM. Chouet (Dr. Pierre's), Cresp (Mottel's), Bijon (Coudray & Cie.), Gallet (Roger & Gallet), Guerlain, Klotz (Pinaud's), Le Caron (Gellé's), Lemercier (Bully's vinegar), Merle (Bruno Court), Pilar, Piver, Prot (Lubin's), Raynaud (Oriza), Roberty, Vachon, Bavaux, and Vibert, with M. Hutinet, a workman, Beyer (machine-maker), and Lhôte (expert chemist).

THE ENGLISH EXHIBITORS

will number 500 or so in all. We recently published a list of forty firms connected with pharmacy, &c., who have decided to show.

The Paris offices of the British Commission (to whom all applications regarding exhibits in the British Section should be addressed) have been removed to 11 Avenue de la Bourdonnais. The Assistant-Commissioner General, Mr. Spearman, occupies the *entresol*. The first-floor is reserved for Colonel Jekyll, who will probably come over to Paris permanently early in 1900. Sir F. Abel, Lord Lister, and Lord Kelvin, amongst others, sit on the Committee for Admission of British Exhibits.

OUR FOREIGN RIVALS

are keenly appreciative of the advantages of Paris Exhibitions as a wedge for opening foreign trade. Paris is perhaps the only city in Europe which Anglo-Saxon and Teuton, Latin and Slav, North and South American visit with equal alacrity, and where they all meet on common ground. "Not a business-centre," some may object; but the heads of most of the biggest business-houses in the world will be pretty sure to pay it a visit. There has been considerable competition for space among the various European nations and the United States. All have had their demands considerably cut down. Germany, the United States, and Russia are the countries which have received the largest amounts of space. Germany will have a very complete show in the Chemical Section. America is making great preparations, but she is likely to display machinery and mechanical appliances. Electricity, transport, &c., are her specialities just now. In fact, there are few of the principal countries of Europe who will not show something to interest the pharmacist, though we understand our Belgian pharmaceutical friends have made up their minds not to exhibit.

CONGRESSES

will form an important and interesting feature of the Exhibition. A handsome building is being erected close by the Pont de l'Alma, to be devoted specially to this purpose. Certain sections of the Hygiene Congress of the French Association for the Advancement of Science and of the Medical Congress will have much in them to interest pharmacists. The Medical Congress is to be presided over by Dr. Lannelongue, who was M. Félix Faure's doctor, and attended him at his death. A Congress on "Therapeutics and Materia Medica" was talked about some time ago, but the idea does not seem to have made any progress. Dr. Archambaud had the idea of a Medico-Pharmaceutical Congress, where doctors and pharmacists should meet on common ground and endeavour to smooth away all causes of friction, but this also has been abandoned.

We deal separately with the Pharmaceutical Congress. We have already announced that the fourth International Congress of Applied and Analytical Chemistry will meet at the Sorbonne in July, 1900, and will comprise ten sections. M. Berthelot will be President of Honour, M. J. Dupont (of the Analytical Chemists' Association) Secretary, while the President will be Professor Henri Moissan. It would seem probable that Lavoisier's statue at the Madeleine will be unveiled during the sittings of the Congress.

THE HISTORICAL ELEMENT.

The general idea of the Retrospective Sections which will figure in most classes—and of which, by the way, M. François Carnot, the youngest son of the murdered President, is "chief of group"—is to exhibit the progress made in each art and industry. A slight attempt was made in 1889 in this direction by the exhibition of Lavoisier's chemical apparatus. This idea, we believe, originated with M. Grimaux, the "Dreyfusard" ex-professor of chemistry at the Polytechnic School, Paris. M. Guimet, founder of the Guimet Museum at Paris, descendant of the discoverer of ultramarine blue, and still in business in that line, is the Chairman of the 1900 Exhibition of the History of Chemistry; and his secretary, M. Debuchy (a wholesale druggist in the rue Vieille-du-Temple), has issued a circular asking for exhibits. It is extremely probable that the Parisian museums and educational establishments will be loth to part with their historical treasures during the year of international intercourse, but the provincial museums will, doubtless, be less chary of help.

International Pharmaceutical Congress.

OUR PARIS CORRESPONDENT GETS SOME ADVANCE INFORMATION.

THE next International Congress of Pharmacists will be held in Paris about August 8, 1900. At present it is proposed to hold the Congresses of Applied Chemistry, Medicine, and Pharmacy consecutively in the order named. The last meeting of the committee of organisation of the Pharmaceutical Congress was held on Wednesday, July 12, when M. Gariel, of the Ministry of Public Instruction, attended, and on behalf of the Minister officially nominated the committee, which, however, has been at work for the past twelve months. M. Gustave Planchon, Director of the Paris School of Pharmacy, is Chairman; M. Petit, of Paris, and Professor Dupuy, of Toulouse, Vice-Presidents; and Professor Bourquelot Secretary. The latter post will be no sinecure, and the professor is to have four assistants: M. Desvignes, of Paris, and M. Viaud have already been named, two others are yet to be appointed. M. Labelonye and M. Leroy will act as Treasurers. The committee of about thirty comprises Paris professors, hospital pharmacists, members of the Codex Committee, some of the officials of the Paris Society of Pharmacy, the Council of the General Association of French Pharmacists, Syndicate of Pharmacists of the Seine, &c., while the provinces are represented by three Southern delegates and some provincial professors. The Congress will be divided into four sections—(1) General

pharmacy (galenic and medical), (2) materia medica (pharmacognosy), (3) biological chemistry and bacteriology, and (4) professional interests. Among the subjects for discussion will be included:—"The Best System of Preliminary Education for Pharmacists," "The Limitation of Number of Pharmacies; its Desirability and its Results," "The Best Methods of Assay for Active Principles in Medicaments," and the "Equivalent of Competency" from a point of view of the possibility of the international interchange of diplomas. Urology (urine-analyses) will also probably give rise to an interesting discussion.

Invitations to take part in the Congress are to be sent individually to leaders of pharmacy (professors and eminent men) all the world over, to schools of pharmacy, societies, &c. Each intending member will be asked to give beforehand, in writing, ideas and information on the subjects for discussion. "We want everyone who has something new to say to say it," explained one of the committee to our Paris Correspondent a few days ago, "but we haven't much time during meetings. Our idea is to get the written ideas in advance, and embody in the printed report (given to each member at the *séance*) the ideas of the principal authorities in several countries, so as to explain matters fully and avoid unnecessary discussion. Besides, many foreign members who cannot speak French fluently will thus have their ideas put before all present. A good deal of time was lost in 1889 in desultory discussion, and we hope to minimise this by preliminary organisation."

The Palace of Congresses now in construction near the Alma Bridge will probably be available for the opening or closing ceremony (perhaps both), but it would seem probable that M. Planchon will invite the Congressists to do their practical work at the Paris School of Pharmacy. The two roomy amphitheatres, suitably decorated, will afford accommodation for the general meetings, and the class-rooms, &c., for the sections. The Minister of Public Instruction will presumably formally inaugurate the proceedings and preside at the opening meeting.

The Syndical Chamber of Pharmacists of the Seine, the General Association of French Pharmacists, &c., will probably have to find the funds. The subscription of members (20f. apiece) will only cover a small portion of the cost. The Parisian pharmacists will be lucky if they are not more than 400f. (10,000f.) out of pocket by their hospitality. The Parisian pharmacist is one of the most courteous and obliging of his race, and a more thoroughly pleasant and interesting set of men it would be hard to find. It is, perhaps, to some extent the absence of commercial instincts amongst the leaders of pharmacy in Paris which enables them to retain that charm of manner they possess to so great a degree. So far they have arranged for receptions at the Hôtel de Ville and other places, a gala performance at one of the four leading Government theatres, a steamer-trip on the Seine (probably from Rouen to Havre), and visits to the Exhibition will be diversified by such things as a trip to the sewers, the pumping-stations on the sewage-farms, and visits to one or two leading pharmaceutical manufacturers' works. It is probable that one or more distinguished scientists will lecture on their favourite subjects, but my informant is necessarily discreet on matters not yet officially arranged.

"And please explain that we want to have a really international congress," he concluded. "We want them all to come, and to see every country properly represented by professors and scientists, pharmacists in business, and everyone who is interested in the welfare of the profession. We don't invite manufacturers, but if some of those whose names are household words here send in their application for membership, we, their customers, will be glad to see them. We intend even to admit a certain number of such medical men as take real interest in pharmacognosy. Let our Anglo-Saxon *confrères* be assured of a hearty welcome; if they haven't been to Paris, tell them it's a nice city to visit." Which is a very modest reference to its attractions.

DOCTOR: "There's nothing serious the matter with Patsy, Mrs. Mulcahey. I think a little soap and water will do him as much good as anything." Mrs. Mulcahey: "Yis, docther; an' tell me will Oi give it t' him befor or afther his males?"

Summer Supplements

TO "THE CHEMIST AND DRUGGIST."

CONTRIBUTED BY BUSINESS FIRMS.

A Concise Summary of what they are about.

THE art of advertising appears to be growing in the trades which this journal represents, if we may judge from the splendid insets which form an important part of this Summer Number. It is a difficult thing to write a page advertisement which is to be set up in plain black type, but it requires exceptional artistic skill to make an effective circular. Yet we think it will be generally admitted, after those that are inserted in this number are carefully examined, that they reach a high level of excellence. We, on the editorial side of THE CHEMIST AND DRUGGIST, feel almost jealous of the Publisher's achievements in getting together so many really interesting contributions to pharmaceutical literature, as several of the insets in this issue unquestionably are. This, however, is a gain to our readers, who, during any quiet moments they may have within the next ten days, will find it profitable to turn these over, examine them carefully, and follow up the examination by addressing inquiries to the firms interested.

We receive circulars, price-lists, and specimens of counter-bills, or other advertising matter of a similar nature, for insertion in THE CHEMIST AND DRUGGIST twice a year only, and there will be no other opportunity until January 27, 1900. The Publisher is always pleased to give inquirers full information about insets, and whatever advice he can in regard to their production. It is especially to be noted that the printers of such insets require instructions regarding their make-up, and a printed slip containing such instructions can be obtained on application to our Publisher. Considering the number of firms who never miss an opportunity of having something of this kind in our Summer and Winter Numbers, this method of advertising is a proved success.

In the paragraphs which follow we describe succinctly the contents of each inset, and the folios attached to the paragraphs represent the pages of the ordinary advertisement-sheets between which the particular insets will be found.

W. H. Bailey & Son, 38 Oxford Street, W., whose system of boxing suspensory bandages we called attention to some time ago, give on their inset a facsimile in purple and gold of a box. This is an effective piece of printing, as it shows buyers exactly what the system implies in shop convenience and expedition of business. The firm offer a sample cabinet for 30s., containing two dozen assorted bandages, which should sell readily at something like 5s. The back of the circular contains representations or particulars of douches, enemas, trusses, and other surgical goods. (Pp. 32-33)

Baiss Brothers & Stevenson, of 4 Jewry Street, E.C., with which firm H. E. Stevenson & Co. have been incorporated, insert a circular dealing with their pharmaceutical products and essential oils, and to this they add concise particulars regarding a series of galenical specialties made by them, including Hopkinson's liquor. colchicin. salicyl., mist. bismuthi aromat., a whole series of compound liquors, syr. hypophos. co., cod-liver oil emulsions, and glycerin-jelly, which they supply in bulk suitably packed for retailing. The circular also contains particulars

of Stevenson's copaiba and sandalwood liquors, which, with other of Messrs H. E. Stevenson & Co.'s preparations, are now obtainable from this firm. (Pp. 138-139.)

Barron, Harveys & Co., Giltspur Street, E.C., take first place in the series of supplements. It appears that an *edition de luxe* of THE CHEMIST AND DRUGGIST would not be complete without a history of a leading trade-firm, and Messrs. Barron, Harveys & Co. make a welcome contribution to pharmaceutical literature by their graphic and beautifully-illustrated *brochure*. This firm appear to be the only eighteenth-century London drug-house remaining in the City on the spot where their business was established. They are able to trace their activity back to the year 1786. Internal evidence however, shows that the firm must have been established some time before, and throughout their long career they have remained in practically the same spot, only annexing neighbouring buildings as the business has extended. The present generation of Harveys is the fourth of the line actively engaged in the business, and it is curious to observe the family resemblance traceable between the original Edward Harvey and his descendant, Mr. Ralph Key Harvey, now at the head of the firm, especially if the upper parts of the faces are compared. Another notable fact gathered during the perusal of the sketch is that from the beginning the partners of the firm have been working partners, and this appears to be as true of the present three partners—Messrs. R. K. Harvey, Roger M. Harvey, and W. L. Howie—as it is of those who preceded them. Apart from biographical details the sketch contains a great deal of interesting information regarding the development of the drug trade in London during the past century, and there is also a light description, copiously illustrated, of the internal working of the business at the present day, which will convey to everybody a clear idea of what the wholesale drug-trade actually is. The illustrations include pictures of the pill-department, which is an important part of Messrs. Barron, Harveys & Co.'s business, and the series concludes with a quaint picture of "a vanished industry." The inset is beautifully produced, and is well worthy of preservation as a piece of pharmaceutical literature. (Inserted loose.)

Thos. P. Bethel, 115 Islington, Liverpool, gives in his two-page inset pictures which have been taken with his 5s. "Crown" camera. The more we see of the work done with Mr. Bethel's cameras, the more are we surprised that he can give for such small sums—for he has also a 2s. 6d. camera to sell—instruments which do really good work, and all dealers in photographic goods should certainly get samples from him if they have not done so before. The cameras are good for exportation as well as for home trade. (Pp. 138-139.)

Bogert & Cooper, 162 William Street, New York, are wood-turners, and offer in a copiously-illustrated circular a considerable number of articles which are required by the drug and druggists' sundries trades—for example, screw-topped boxes for bottles, connections for

feeding-bottles, menthol-holders, cork tops, pill-bottles, pill-boxes—and, indeed, the firm make any kind of turned wood which the drug-trade requires; and any particulars in addition that may be required can be obtained from their representatives, Messrs. Nicholl & Allen, 66 Fenchurch Street, E.C., and Mr. W. J. Beck, 52 Margaret Street, Sydney, N.S.W. (Pp. 170-171.)

Mr. L. Brager, 356 City Road, E.C., agent for Kahnemann & Krause, Vienna, inserts, in our home issue only, a prettily-illustrated price-list regarding "Cachets Kahnemann" and apparatus. He also figures the tablet-compressor which we described some time ago, and which we then showed to be an efficient apparatus for the production of compressed tablets by retailers. This circular is printed in a style new to us, one side of the paper having a gelatin surface. (Pp. 170-171.)

Brunner, Mond & Co. (Limited), Northwich, England, the makers of the "Crescent" brand of sodium bicarbonate, give on their usual inset full directions for the use of bicarbonate in the place of chalk for the production of carbonic-acid gas in soda-water manufacture. Sodium bicarbonate is cheaper and cleaner than chalk, and is now rapidly replacing the latter, especially for export trade. (Pp. 64-65.)

James Burrough (Limited), of Chelsea, S.W., supply all kinds of wines and spirits required by druggists. There is between pp. 218-219 an inset about them, from which it will be specially noted that the firm give prominence to S.V.R. and S.V.M., and to the "Red Cross" brand of coca-wines.

John Calabrese & Co. (Limited), 26 Billiter Buildings, E.C., have an exceedingly striking circular which is to tell the trade that something "slays utterly young and old"; but what it is can only be ascertained when the beetle on the front page begins to fly, and we must leave our readers to assist in that process. (Pp. 218-219.)

J. Harrison Carter, of Dunstable, is the maker of most of the disintegrators which are used by wholesale druggists and drug-grinders. These disintegrators can be obtained in sizes to suit small and large grinders. They will grind anything from bricks to rhubarb, and they do their work so well that practically all the comminution required in preparing drugs for percolation, &c., is now done with such machines. The illustrations given on the inset show the structure, and on page 2 are the prices, while on the last page are given the names of agents in various parts of the world who can supply the disintegrators. (Pp. 218-219.)

The Chemists' Aerated Mineral Waters Association (Limited), of London, Manchester, Harrogate, Birmingham, Bristol, and Mitcham, are adepts at symbolism, and the Fountain of Prosperity which they send with this issue is presumably intended to shower profits on the members of the company, who are chemists. There are two very striking pictures in the interior, and an amusing picture to finish up with. (Pp. 64-65.)

T. Christy & Co., 25 Lime Street, E.C., appear to have most novel ideas in circular-printing as well as the latest things for druggists to handle. Their present inset is entitled "Novelties of Note," and these we find are "Morstadt" cachets and koseals, and apparatus for closing the same, menthol-cones, fruit-syrups, and a whole line of counter and medicinal specialties for which they are special agents. The last page of the circular is devoted to a price-list of collapsible tubes, which are brilliant in appearance and colour, and have the labels printed directly upon the metal. Messrs. Christy & Co. supply machines for filling and closing the tubes. There is an illustration of the

filling-machine, which shows that it is very simple in action. (Pp. 138-139.)

G. Foster Clark & Co., of Maidstone, show, in their circular regarding Eiffel Tower lemonade, that a gross of it yields a profit of 14s. 1d., equal to 35 per cent., and in this hot weather, with judicious display, that is an amount which can readily be sold in a day. They give reasons in the course of the circular why it pays the chemist to show Eiffel Tower lemonade and push it. (Pp. 32-33.)

The Cork Company (Limited), London, are the manufacturers of the "Maxa" corks. These are made by the dry process, which is described in the circular and contrasted with the wet process. What they claim for their corks is that they are free from mould-microbes and are practically sterilised. (Pp. 218-219.)

Daisy (Limited), of Leeds, for the first time, as they notify on the front page of an ideal inset, have come into the ranks of those who find that it pays the advertiser to insert circulars in the *C. & D.* They make their inset exceedingly attractive by offering the trade some special lines which will tempt them to beat the 5% window which Mr. H. S. Arnold, of Cwm Avon, Port Talbot, designed, and the competition was so good for Daisy, as well as for the competitors, that the former are now offering 25% as a prize for a competition on totally different lines. Particulars of this are given in the inset. (Pp. 32-33.)

Davy, Hill & Son, Yates & Hicks, 64 Park Street, Southwark, S.E., insert a facsimile reproduction of a bottle of Esvach water. This circular can be torn off so as to be used as a window-poster. As our opinion of this new water is printed on the back of the circular, we need not add anything further regarding it. (Pp. 32-33.)

J. Defries & Sons (Limited), 147 Houndsditch, E.C., are the sole licensees and makers in this country of the Pasteur (Chamberland) filter. Of this they give a brief description on an illustrated circular, with particulars about various kinds of filters and the prices at which they sell. It is now considered that such filters as these, which sterilise the water, are absolutely necessary for mineral-water manufacturers. (Pp. 64-65.)

The Domett Belts Company, 456 Strand, W.C., offer to send to any of our subscribers a supply of the tenth edition of the Domett handbook, in which full instructions are given for the measurement of the body in ordering abdominal belts, with illustrations of these and the manner of application. The handbooks can be distributed amongst likely customers with good business-results. The company are manufacturers of abdominal belts, belt corsets, elastic stockings, and other surgical appliances of this nature. (Pp. 170-171.)

Durant & Co., 19 Mount Pleasant, W.C., are the people who are responsible for Dylissia. It is the cream of skin-emollients. There are three creams—"Toilet," "Medical," and "Baby"; a powder for the toilet and nursery; dentifrice in two forms, "Toilet" and "Popular"; lip-salve, toilet-powder, and fullers' earth—all of which figure on the back of the circular. (Pp. 32-33.)

The proprietors of Edgar's Croup-lotion (Limited), whose headquarters are at Dartford, again intimate that next year is the Diamond Jubilee of the introduction of this old-established proprietary, and they propose to give chemists various free advertisements, of which particulars will be obtained on application. The lotion is put up in 1s. 1½d. and 2s. 9d. bottles, packed in a dark-blue carton, of which the exact reproduction is given on the inset. (Pp. 138-139.)

Ellams Duplicator Company, 12 King Street, Cneapside, E.C., illustrate the method by which hundreds of copies of any letter or circular may be obtained by means of their duplicator, which is equally suitable for handwriting and typewriting. In both cases a stencil of the matter is made, and the rest of the work can be done by the errand-boy. Prices are quoted for the machines and accessories. (Pp. 138-139.)

Fassett & Johnson, 31 and 32 Snow Hill, E.C., who are the agents in this country for Diamond dyes, insert in the copies of this issue distributed at home a circular referring to the dyes, which is made attractive by a pretty American girl who figures on the front page, and whose beauty is reproduced by the three-plate printing-process. The firm offer highly attractive advertising-matter and showcases to those who send orders for the dyes varying in value from 22s. to 4l. 4s. The offer is so tempting that we have no doubt that many of our subscribers will utilise the order-form which is given on the third page of the inset. Of the dyes it is unnecessary to say more than that they are as popular in the United Kingdom as in the United States. (Pp. 64-65.)

D. & W. Gibbs (Limited), City Soapworks, London, offer the trade a selection of most amusing handbills for advertising their "Cameo" soaps. The Cameo shaving-soap is one of the nicest things of the kind which we have used, and the picture on the counter-bill is well calculated to promote the sales. The other "lavatory luxuries" of this firm are cold-cream soap, cold-cream shaving-soap, and balsamic Cameo tablet. (Pp. 32-33.)

Robert Gibson & Sons (Limited), Carlton Works, Manchester, the original makers of chlorodyne lozenges, insert a facsimile print in colours of a tin such as they use for linseed, liquorice, and chlorodyne cough-lozenges. These tins are most artistic productions, which keep the lozenges well, and enable chemists to keep stock in a methodical way, or to show it well. The firm send out all their medicated lozenges in this form. The back of the inset has on it an illustration representing a pyramid of tins of chocolate worm-cakes, which are very popular with children. (Pp. 64-65.)

Goddard & Son, Silver Street, Hull, are artistic printers, and they want any advertisers who are thinking of putting an inset into the *C. & D.* to write to them for particulars of how they do their work. Their own inset is a good example of their handicraft. They also offer the "Suitall" series of letter-copying books with quotations for several styles and quantities. (Pp. 138-139.)

Goodwins, Salford, Manchester, are the people who say, below the charming face of a girl:—

Lift this sheet and you will see
What it is that pleases me,
Whence this skin so clear and white,
Whence my smile so arch and bright.

It is a clever arrangement, and many chemists no doubt will take the advantage of getting a supply of the attractive handbills to which this inset refers. (Pp. 32-33.)

JOHN GOSNELL & Co. (Limited), do not put their address upon the beautiful circular which they insert, but "Upper Thames Street, London" will find them. Our publisher protests that no address is necessary, the makers of Cherry Blossom being so well known that the mere name is sufficient. The front page of the circular is intended as a showcard for Gosnell's *Famora*, a name applied to a series consisting of perfume, toilet-powder, and soap just introduced. The printing is a reproduction by the three-plate printing-process of a photograph from nature by

Downey, and is one of the best examples of this process which we have yet seen. By a gentle lapse into practical alliteration, Messrs. Gosnell have phonographs to give a filip to *Famora* which they lend to retailers. Particulars about them are printed on the back page of the inset. (Pp. 32-33.)

Wm. Gray & Co., Hull, are makers of pure English white-lead, paints of all kinds, and varnishes, and dealers in linseed oil, turpentine, paraffin oils, and all kinds of dry-salteries, quotations of which are given on their circular inserted between pp. 218-219.

Mr. William Hay, of Hay's Hygiene Food-works, Hull, sends with every number a copy of his "Album of Celebrities," and a little pamphlet on Hay's foods. The album is for distribution to select customers, and the pamphlet for general distribution over the counter. Mr. Hay tells us a very peculiar fact regarding the album, which illustrates the correctness of the portraiture in it. A lady in Essex had for almost a life-time been the possessor of two large paintings of the time of James II., the identity of which she had not the slightest idea. Happening to get a copy of Mr. Hay's album she found, to her great delight, that one portrait was that of the notorious Judge Jeffreys, and the other she afterwards discovered was a portrait of Jeffreys' wife. The distribution of these souvenirs by Mr. Hay is a costly business, and shows that he has unbounded confidence in the foods which they help to advertise. These are invalids' and infants' foods. We had an opportunity some time ago to report favourably upon them, and continued experience corroborates what we have already said. In addition to offering the foods ready put up for sale, Mr. Hay sells them in bulk by the hundredweight and supplies the purchaser with tins and artistic labels so that they may do their own packing. (Pp. 64-65.)

Hillaby's (Limited), of Pontefract, have a cheerful tale to tell regarding the success which has attended twelve months' persistent advertising by them, and they are making in their beautiful circular a good offer to chemists. During the approaching season, when they hope liquorice will be in the mouths of everybody, Hillaby's intend to send out samples of their goods to 50,000 people, and they invite chemists to permit their names to be sent out with these samples. The back page of the circular contains coloured facsimiles of the stock and other boxes in which their manufactures are sent out, and which have contributed greatly to advance the popularity of these convenient forms of using liquorice. (Pp. 64-65.)

Dr. Hunter's Medicine Company, 15 Park Place, Leeds, offer to give the public 100% in prizes for the best 153 sentences formed from the titles of Dr. Hunter's ruby tonic, blood, and nervine pills, ladies' pills, head, stomach, and liver pills. One coupon is attached to the 1s. 1½d. size of each of these specialties, three coupons to the 2s. 9d., six to the 4s. 9d., and twenty to the 11s. sizes respectively, so that the chances of getting from 5s. to 25% in prizes increase with the consumption of the remedies by customers; and chemists are further encouraged to aid the competition by 50%, which is offered in bonuses upon the terms described in the inset. (Pp. 170-171.)

Idris & Co. (Limited), Camden Town, are telling the trade how Idris Royal Table-waters are manufactured. Their factories in Camden Town, if not the largest in the world, are certainly in the first three or four, and the stream of delivery-vans represented in the picture on page 2 will bring home to our readers what one otherwise cannot realise without a visit to the factory. All the pictures we may testify to being plain unvarnished records of truth; and

we gather from a perusal of the description that since we visited the factory and described it three years ago there has been enormous development in nearly every department. (Pp. 64-65)

Messrs. J. G. Ingram & Sons, of Hackney Wick, E., illustrate four special syringes which they manufacture. The "Venda" ladies' syringe is the twin arrangement which took the Chicago Exhibition medal and diploma award in 1893. It is an alternate donche and suction syringe, the bulb being divided into two compartments, and the nozzle having two separate channels running through it. The alternate action of injection and drawing-off the water can be kept up as long as desired without withdrawing the nozzle, the same water never being used twice. The "S'elo" pocket-syringe advertised by this firm is suitable for the ear, nose, or urethra. The "Onah" syringe, which is intended for vaginal irrigation and has a tube for the effluent independent of the syringe itself, and the original Ingram's enema-apparatus are described. (Pp. 170-171)

The Ivory Soap Company, 15 Philpot Lane, E.C., cement the Anglo-American alliance by reminding our readers that the ivory soap manufactured by the Procter & Gamble Co., of Cincinnati, floats under the protection of the Stars and Stripes and the Union Jack. This emblem is printed on a facsimile of handbill for counter-distribution, of which the company will send a supply to any inquirer, and along with them they give a sample of the ivory soap. (Pp. 32-33)

Keene & Ashwell (Limited), 74 New Bond Street, give an example of the agent's showcases, fitted with homœopathic pilules, tinctures, or "perloids," which they supply for 6*l.* 6*s.* This particular case is a desk. "Perloids" are homœopathics which contain an exact dose, and are therefore more reliable and stronger than pilules, quite equal to tinctures, and much more convenient. In the case also of the insoluble medicines, such as mercury, they present distinct advantages. Messrs. Keene & Ashwell ask the trade to decide—

"Whether it is nobler in the chemist
To retail medicines bought at under cost,
Or take up 'Perloids' against a sea of opponents,
And by enterprise defeat them?"

(Pp. 218-219)

The Kum-pholax Company, 179 Malpas Road, Brockley, S.E., are the makers of a new hair-restorer and preservative bearing the name "Kum-pholax." A representation of the bottle is given on the first page of the inset, and concise particulars as to its properties on the second. It retails at 3*s.* 6*d.*, and chemists will, of course, be the medium of introducing it directly to the public. (Pp. 32-33)

J. Lancaster & Sons, Birmingham, the well-known dealers in photographic goods, insert a four-page price-list of their cameras and other optical goods. It will be understood by those who examine this list that the prices attached to the illustrations are the retail prices, and that the firm give special discounts to chemists. We should recommend those who are interested to write to the firm for all the particulars that are necessary; their goods are safe stock. (Pp. 138-139)

The London College of Chemistry, Pharmacy, and Botany, which Mr. Henry Wootton, B.Sc., has now opened, gets an appropriate send-off in an illustrated description of the building. The inset shows an exterior view of the college, a corner of one of the chemical laboratories, the lecture-hall, the balance-room, and the botanic garden. We refer on another page to a visit paid to the college by one of our staff, and all that is necessary

here is to call attention to the time-tables and list of fees printed in the inset. (Pp. 64-65.)

McKesson & Robins, New York, U.S.A., insert a beautiful circular, printed on a grey linen-surface paper. On this circular they mention some of the crude drugs, essential oils, and resinoids of which they are very large exporters, and we observe that American sponges are also a special line of theirs. The inset, however, is chiefly devoted to a list of ovoid capsuled pills and compound stearates, of which they are the manufacturers. (Pp. 138-139)

May, Roberts & Co., 9 Clerkenwell Road, E.C., make a timely advertisement with their circular regarding Dr. John Hooper's pills. We say timely, because the fictitious medicine stamp which we recently received from New York, and which was mentioned in last week's *C. & D.* (page 130), was for Dr. John Hooper's pills. There is no doubt that Messrs. May, Roberts & Co. have to contend, especially in the colonies, with these vile imitations, and it is well that they have printed the facsimiles of the remedies that are given on page 2. We should strongly recommend our colonial readers to compare their stock with the facsimile. On another occasion Messrs. May, Roberts & Co. may perhaps add to the inset facsimiles of the genuine and imitation stamps. (Pp. 170-171)

Newball & Mason, of Nottingham, devote their inset to a review of Mason's advertisements of extract of herbs, essence of coffee, lemonade-crystals, and syrups and cordials for Christmas parties. Some of the designs are original and attractive, especially the one on the fourth page of the inset. (Pp. 64-65)

A. & F. Pears (Limited), of London, New York, and Melbourne, devote their circulars solely to the prices of the various sizes of Pears' Soap and their Transparent Glycerine-soap. The company have now secured twenty prize medals for their manufactures, and they succeed in a remarkable manner in maintaining the popularity of their soap, for which they have also received no fewer than one hundred favourable opinions from analysts and soap-makers throughout the world. (Pp. 32-33)

A. M. Post (Limited), 96 and 98 Leadenhall Street, E.C., are the manufacturers of Post's "C. B. Q.," the remedy for rheumatism which has come into so prominent notice within the past two or three years, and their circular is devoted to it. The front page of this circular contains a representation of a pillar post-box, but whether this has any punning connection with Post's pills we must leave our readers to judge by opening the door at the proper time of collection. (Pp. 170-171)

Robinson & Sons (Limited), of Chesterfield, repeat a very striking inset which they had in our Winter Number, on which they exhibit the picture of a bathing-machine with closed door. This is but one of Messrs. Robinson & Sons' lines, as they are well known as manufacturers of all kinds of surgical dressings, lint, bandages, absorbent cotton, and gamgee tissue, while their cardboard boxes are well known to the trade. Several new designs in these are shown on the back page of the inset. (Pp. 170-171)

Wm. Sanderson & sons, Messina and Tremieteni, Sicily, send us a lemon-coloured inset which deals chiefly with but lemons and the produce made from them. Mr. Wm. Sanderson, the founder of this firm, went out to Messina in 1817 to embark in the lemon-industry, which the third generation of his family is now carrying on with much success. The inset gives interesting particulars of the rise of the business, and views of the office and factory where oils of bergamot, lemon, and orange are manufactured; but we note that oil of bergamot is made in a branch at Regio Calabria, because the fruit there is richer

in perfume than the Sicilian fruit. We note also in regard to the preparation of oil of lemon that no human hand is employed to press the virgin oil from the peel, as it is entirely extracted by machinery. The pictures of the lemon-bins and juice-vats, the hydraulic presses and vacuum-pans for concentrating the lemon-juice, give one a good idea of the exceedingly large scale on which this firm conduct their business; and they have every right to conclude their monograph by saying that the name of Sanderson stands for "the best." (Pp. 32-33)

The Sanitas Company (Limited), Bethnal Green, E., again send us for distribution to the trade a sample of the counter-bill which they wish to supply to any who ask for a supply. Also they are willing to send show-plates. They remind the trade that the "Sanitas" preparations are included in the P.A.T.A. list, and that they deliver orders of 2*l.* upwards free to any railway station in the United Kingdom. (Pp. 218-219)

Andreas Saxlehner, Buda-Pesth, whose London agency is at Trafalgar Buildings, Charing Cross, W.C., once more inserts the chromo-lithographic description of his establishment near Buda-Pesth, where Hunyadi water is pumped and bottled. We may recall the fact that Mr. Saxlehner's London agency offered to supply the trade with handbills similar to the first page of this inset, the back being blank, on receiving trade-card. (Pp. 64-65.)

F. Schutze & Co., 89 Southwark Street, S.E., have printed a selection of extracts from their general price-list, and invite the trade to give the print their careful study with a view to orders. The inset contains particulars of many kinds of druggists' sundries, surgical appliances, enemas, &c., besides Grant et Cie.'s perfumeries and soaps. Various brushes are also quoted in typical style, and there are two pages devoted to counter-specialities which this firm have developed in a consistent manner during the past few years. (Pp. 170-171)

Shew & Co., 87 and 88 Newman Street, W., are the manufacturers of the "Xit" and other cameras. Of these they give specifications on an illustrated price-list inserted in this issue, besides particulars of other apparatus which they manufacture, and which include a number of detective cameras new this season. (Pp. 138-139)

Mr. H. Silverlock, 92 Blackfriars Road, S.E., inserts a special price-list devoted to chemists' slips, dispensing-labels, counter-handbills (of which two striking examples are given on page 2), chemical fly-papers, the well-known set of poison-labels, and various publications printed by him. In addition to these the inset mentions a varied lot of chemists' stationery and cardboard boxes, and calls attention to almanacs for 1900 which are now in preparation. (Pp. 138-139.)

Spottiswoode & Co., New Street Square, E.C., have, perhaps, the most extensive facilities in London for doing all kinds of printing, as their work includes not only typography, but lithography and photo-mechanical printing. In addition to printing several of the leading weekly journals, they print a few of the largest price-lists which circulate to the drug-trade, and it is in this connection that they especially appeal to our readers. (Pp. 138-139.)

Spratt's Patent (Limited), Bermondsey, S.E., have a new inset this time containing a number of interesting pictures, that on the first page being a remarkable blending of the living with the pictorial. The remainder are famous dogs, such as Miss Georgina Middleton's "Great Dane"; Miss Cissy Grahame's pug, which was dying with distemper until it took Spratt's cod-liver-oil biscuits; and Miss Fanny May's team of prize Boizois, which are also fed on Spratt's

cakes. These pictures of different kinds of dogs are not put there for nothing; we believe they really are intended to indicate that no matter what the breed of the dog may be, Spratt's have a food for him. (Pp. 218-219)

Stevenson & Howell (Limited), 95A Southwark Street, S.E., insert a remarkable bunch of fruit consisting of strawberries, black currants, raspberries, gooseberries, cherries, and red currants so like Nature that one almost forgets that the strawberry-season is over. This picture shows that Stevenson & Howell are manufacturers of fruit-essences; and from the back of the circular it will be observed that a "perfect" soluble essence of lemon is the firm's chief speciality, and particulars are given regarding it. (Pp. 32-33)

Wm. R. Warner & Co., of Philadelphia, U.S.A., whose depôt in this country is in charge of Messrs. F. Newbery & Son, King Edward Street, E.C., insert an illustrated price-list of their sugar-coated pills, and show counter-vases for the same. The price-list also includes a series of illustrations of the methods in which they put up "Lentiforms," this being a name applied to their compressed tablets; also mineral-water tablets which they have now made for several years, Tono-Sumbul cordial, granular effervescent salts, and various other pharmaceutical preparations, of which they are the manufacturers, and which are very well known in this country. (Pp. 170-171)

The Western Pharmacies Company, of Yeovil, are the manufacturers of a sticky fly-paper, and they intimate the fact in a way that we have not previously experienced in our inset department—that is, to insert a sample of the paper without the gum. Here we learn that it is

The stickiest sticker that ever stucked, always sticky when other slippery sticky stickers have lost their stick.

We wonder if they have offered a prize to the member of the Pharmaceutical Conference who, after the smoking-concert, is able to say that in a clear and distinct manner; anyway, it is a fair test of recovery from Devonian hospitality. These fly-papers are made with what the makers call butterfly-gum, and the gum is sold in tubes as well as spread on paper. Four free samples are offered on application. (Pp. 218-219)

New Books.

Any book named in this list can be supplied post-free to any part of the world on receipt of the published price by the Publisher of THE CHEMIST AND DRUGGIST, 42 Cannon Street, London, E.C.

Awdry, Mrs. W. *Early Chapters in Science: a First Book of Knowledge of Natural History, Botany, Physics, and Chemistry.* 12mo. (N. York) London. 9s.

Ruddock, E. H. *Homœopathic Vade Mecum of Modern Medicine and Surgery.* Rev. ed. 8 × 5½. Pp. 1022. 10s. 6d. (Homœopathic Publishing Company.)

Shelley, H. C. *Chats About the Microscope.* Illus. 7½ × 4½. Pp. 102. 2s. (Scientific Press.)

Treves, F. *Intestinal Obstruction: Varieties, Pathology, Diagnosis, Treatment.* 118 illus. Rev. ed. 8½ × 5½. Pp. 578. 21s. (Cassell.)

PREPARING.—Servant: "I want sixpennyworth of court-plaster, a package of absorbent cotton, a bottle of carbolio lotion, two rolls of surgeon's bandage, and a piece of iodoform gauze." Chemist: "Has your master met with some accident?" Servant: "Not yet; but this afternoon he is going to put up a barbed-wire fence."

South African News.

(From our Correspondents.)

CHEMICAL AND METALLURGICAL SOCIETY OF S.A.—The annual meeting of this Society was held on June 24 in the Council-room of the Chamber of Mines, Johannesburg. Dr. Loevy presided, and in the course of his valedictory address congratulated the Society on its progress. The majority of the papers read at the meetings during the past year had for their subject-matter various processes of gold-extraction, and during that time they had settled some important chemical questions of general interest. The President did not expect any member of the Society to be a Demosthenes.

INFRINGING THE NATAL PHARMACY ACT.—At the Umgeni Police Court, Natal, on June 23, a Dutchman named Theodore Cornelius Nel, of Edendale, near Maritzburg, was charged with contravening the Medical and Pharmacy Act, 1896, by representing himself to be a chemist. The first witness for the prosecution was Trooper Perks, of the Natal Police, who said that on April 18 he gave a native constable 10s. with instructions to go to defendant's house and ask him to sell him a bottle of medicine. The constable returned with a bottle containing liquid, which he said he had obtained from defendant for 10s. Subsequently native detectives saw defendant selling medicine to another native, but on being taxed with the offence he said that he gave the medicine away and did not sell it. The native constable who had bought the medicine was called, and related the transaction. The substance of the cross-examination was that the defendant had given the natives the medicine, and that the money he had received had been a free gift from them. At the conclusion of the evidence for the Crown, application was made for the summons to be dismissed on the ground that the prosecution had not proved that contents of the bottles was medicine. Let them assume, for the sake of argument, that the contents of the bottles was dirty water; that would not be medicine. If there had been an analysis of the liquid made, they could then have ascertained whether it contained a drug, but this had not been done. Defendant's counsel said he would call no witnesses for the defence, and argued that there was nothing to show that defendant had pretended to be a chemist. The Magistrate, in giving judgment, said that, whatever might be the definition of the word "medicine," the Court held that the contents of the bottles had not been proved to be medicine, but also held that the charge rested on the pretending to be a chemist, and not on the genuineness of the article sold, and unless strong rebutting evidence was called, the Court would hold that the pretence had been proved. No evidence having been called, the Court adhered to its ruling that Nel did pretend to be a chemist. The accused had acquired a reputation as a successful native doctor, and the Court was satisfied that he sold the medicine to the natives, and did not give it away. It also found that the contents of the bottles was sold as medicine. It was necessary that the native public should be protected from such men as Nel, who must be regarded as a quack and an impostor. Defendant would be fined 20*l.*, or three months' imprisonment, without hard labour. Notice of formal appeal was given.

CAPE ANALYST'S REPORT.—Mr. Chas. F. Juritz, M.A., Senior Cape Analyst, has issued his report for 1898, during which his department analysed 1,650 samples under the Adulteration Act. He took samples of tincture of camphor (32), sheep-dip (7), ciuchona-tincture (7), tartaric acid (7), cream of tartar (5); three samples each of sulphur, tincture of opium, tincture of rhubarb, syrup of senna, syrup of poppies, cinnamon; carbonate of soda (14); and one each of curry-powder, pot. permang., coca-wine, malt-extract, glycerin, antimouial wine, and honey, and found them to be all genuine. Eighty-eight analyses of drugs were made, and only four samples were found to be adulterated—viz., balsam copaiba, tincture of quinine, spirit of nitrous ether, and saffron. The copaiba contained about 30 per cent. of gurgun balsam and turpentine, together with a small quantity of mag. carb., and the bad tincture of quinine contained 107 gr. quinine per pint instead of 160 gr. This sample was procured from Port Elizabeth.

Three samples of spirit of nitrous ether were analysed, and all found to be deficient, being 69 per cent., 72 per cent., and 98 per cent. below B.P. strength. The last sample, however, was not sold as sweet spirit of nitre, but as spiritus nitri dulcis. Two out of four samples of saffron were adulterated, but the Magistrate refused to convict as saffron is not a food or a drug, but a colouring agent. Of the adulterated samples, one from Port Elizabeth contained 29 per cent. baryta sulphate; another from Cape Town 4 per cent. of the same substance, and 9 per cent. of potassium salts. Several pages of the report are devoted to analyses of sheep-dips and disinfectants, and Mr. Juritz gives some valuable information respecting them. Speaking of disinfecting-powders, he says that Jeyes' carbolic-acid powder certainly stands first. It contains light oils and water 4 per cent., carbolic acid 13 per cent., and light coal-tar oils 3 per cent. Quibell's powder "is also very good," containing light oils and water 15, carbolic acid 10, and light oils 2 per cent. Odamine contains 15 per cent. light oils and water, and coal-tar oils containing carbolic acid 15 per cent. Smith's sanitary-powder contains 40 per cent. light oils and water, and 10 per cent. oils containing carbolic acid. Of the liquid disinfectants, Jeyes' perfect purifier is again the best according to Mr. Juritz, as it yields the largest amount of light coal-tar oils, containing carbolic acid in solution. It consists of [this is what Mr. Juritz says]:—

Water and light oils distilling below 120° C. ...	7 per cent.
Light coal-tar oils containing carbolic acid, distilling from 140° C. to 220° C. ...	70 "
Brown neutral coal-tar oils, distilling from 220° C. to 290° C. ...	5 "

Other disinfectants examined are arranged as under in their approximate order of merit:—

	Water and Light Oils below 120° C.	Light Coal-tar Oils containing Carbolic Acid, 140°-220° C.	Heavy Brown Coal-tar Oils, 220°-290° C.
Cannon's dip ...	9 per cent.	65 per cent.	6 per cent.
Union disinfectant ...	10 "	60 "	5 "
Battle's fluid ...	9 "	60 "	20 "
Hayward's fluid ...	10 "	57 "	13 "
Odam's fluid ...	12 "	50 "	15 "
Smith's fluid ...	11 "	50 "	17 "
Lawes's fluid ...	15 "	50 "	20 "
Little's fluid ...	15 "	50 "	30 "
Quibell's fluid ...	20 "	40 "	15 "
Senatine ...	25 "	40 "	17 "

Subsequent analyses of Lawes's fluid and powder gave the following results:—

<i>Fluid.</i>			
Water ...	...	...	12 per cent.
Carbolic acid ...	...	...	20 "
Light coal-tar oils ...	...	...	40 "
Heavy oils, naphthalene compounds, and other coal-tar derivatives ...	...	...	28 "

<i>Powder.</i>			
Water ...	...	...	12 per cent.
Carbolic acid ...	...	...	16 "
Residual absorbent powder retaining some naphthalene and other coal-tar derivatives ...	...	...	72 "

McDougal's mixture is a dark pasty substance containing:—

Light oils and water ...	...	...	34 per cent.
Oils containing carbolic acid ...	...	...	20 "
Heavy oils ...	...	...	25 "

It mixes readily with water, and should make a good antiseptic, says the analyst. Reference is also made to the bases of disinfecting-powders, which must be capable of absorbing carbolic acid and coal-tar oils as a sponge absorbs water; and it is interesting to note that Calvert's carbolic-acid powder has for its base the siliceous residue resulting from the manufacture of aluminic sulphate from shale or kaolin. Calcic sulphate and "kieselguhr" are also used as absorbents, the latter chiefly for stronger powders.

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Editorial Comments.

Irish Pharmacy.

THIS was a new topic for the British Pharmaceutical Conference, and an appropriate one for an Irish pharmacist to take for his presidential address. Mr. Payne is not an Irishman, but long residence in Ireland has made him peculiarly

well acquainted with the course of pharmaceutical politics in that country. He gave an excellent *résumé* of the events which have shaped Irish pharmacy as it is to-day. The separation of pharmacy from medicine was, as in England, the direct result of the accumulation of knowledge, which makes it necessary to specialise in all branches of science; but Ireland has the advantage over England (an advantage which Scotland shares with her), in that the separation is fairly complete, medical men as a body adhering to their medical practice and leaving the pharmaceutical assistance—*i.e.*, the dispensing of medicines—to be done by pharmacists. In this connection Mr. Payne made a happy reference to an address by the late Professor Huxley, the originality and quaintness of which gave much prominence to it at the time. The present generation of pharmacists may not have heard of this effort of Huxley's, in the course of which he alluded to what he thought were unnecessary subjects in the medical curriculum, and, after suggesting that *materia medica* might well be omitted, he gave his own experiences in grinding up Pereira's "*Materia Medica*." Dr. Pereira was an examiner at that time for the University of London, and Huxley declared that, although after weeks of real hard work he managed to get the contents of the book into his head, somehow he forgot it all a week after the examination, and had never been able to recall it afterwards. This is probably the reason why the professor argued that a knowledge about drugs and where they come from is of no use to medical men, just as the late Professor Blackie, who never succeeded in getting his M.A. degree on account of his failures in mathematics, used to say "What's the good of mathematics, or any other attics? Greek's the thing for me, or moral philosophy." There is much to be said, nevertheless, for Professor Huxley's argument. The medical curriculum is now more comprehensive than it was in his day; botany has practically disappeared from it (in England, at least), and pharmacy is fast going, having been reduced in practice to a mere matter of twelve lessons of an hour each. Yet, although nobody would dream of regarding any medical man as a botanist, every medical man in general practice in England considers that he is a dispenser. This anomalous condition does not exist in Ireland. The evolution of pharmacists from the medical profession *via* the Dublin Apothecaries' Hall within our own time enables us to grasp, to the full extent of its inappropriateness, the lingering attachment of the London Apothecaries' Society to pharmacy, while claiming all the privileges of a medical qualifying body. Shortly after the 1868 Pharmacy Act came into force, a portion of an Act drafted by the Dublin Apothecaries' Company was passed for regulating the sale of poisons in Ireland, which did not touch the title "chemist and druggist." The curious anomaly existed that prescriptions could only be made up by members of the Dublin Apothecaries' Hall, whose Act of 1791 gave them the monopoly of dispensing. Chemists and druggists could sell drugs and poisons to any extent, but to be able to compound prescriptions they were required to take the whole medical curriculum. Druggists might dispense family recipes, but were liable to a penalty if they put up a prescription ordering, say, "*ol. ricini ʒi.*" if the prescription was written by a physician. The growing feeling against this anomaly led to the formation of the Chemists' and Druggists' Society of Ireland in 1873, and this Society at first thought of invoking the British Society to extend the operations of their Act to Ireland. They first sought the aid of the Apothecaries' Company, as the Company had the power to provide an examination in pharmacy only, which, however, they would not use. Just at that time the Dublin College of Physicians started an opposition to the apothecaries by

promoting a Bill having for its object the extension of the Pharmacy Act of Great Britain to Ireland. Eventually an independent Bill, suggested by the Chemists' and Druggists' Society, was taken in hand by the Government. The Bill preserved the rights of the Apothecaries' Company, but gave power to establish in Ireland "chemists and druggists" and "pharmaceutical chemists," the latter, as licentiates of the Society, to dispense physicians' prescriptions. Reciprocity between the British and the Irish Society (to be established by the Act) was provided for in the original draft, but this, being opposed for several reasons by the British Society, was omitted. Some objection was raised at the time to the use of the title "pharmaceutical chemist," which it was thought had become a sort of copyright of the British Society, who had invented it. The Bill, which passed in August, 1875, gave the agitators rather more than they ever asked for, and changed the whole aspect of Irish pharmacy. Some trouble followed almost at once, in consequence of the Society resolving to adopt, as they had power to, one grade only—pharmaceutical chemists—thus excluding the registration of the class trading as "chemists and druggists," many of whom had no desire to compound prescriptions. This Act was a practical acknowledgment, as stated in the preamble, that the quasi-medical qualification of the Apothecaries' Hall was insufficient for the dispensing-needs of Ireland—an excellent admission to get into a Pharmacy Act. The decision of the first Irish Pharmaceutical Council to continue the grade "chemist and druggist," for the reasons stated by Mr. Payne, did not, as was at the time expected, lead to the extinction of the lower grade through efflux of time; in fact, this body of traders grew in numbers and influence, and as the Pharmacy Act entrusted the sale of poisons to those registered under the Act, a condition arose which compelled the recognition of the "chemist-and-druggist" class. This was done by the amending Act of 1890, which empowered the Society to register these men and to create the register of druggists. This entitled the lower grade to continue as vendors of drugs and poisons, but left the right of compounding prescriptions exclusively to apothecaries and pharmaceutical chemists. The druggists secured the right of representation on the Pharmaceutical Council up to seven members. Mr. Payne is of opinion that the establishment of the Irish Society has been of great benefit to the public and pharmacists of Ireland, and certainly the standard of examination required by it is well maintained. Ireland has produced many notable names in pharmacy. Mr. Payne mentioned Higgins, Donovan, Kane, Whitla, and Tichborne, but it would not be a difficult task to name many more. Home-rule in pharmacy has, we believe, been an unmixed good to Ireland. Its pharmacy is distinctive, and it is right that it should be kept so. It would have been disaster to have linked it to Bloomsbury Square—that, indeed, was as impossible to the Irish temperament as it would have been impossible for the British Society to adequately administer an Act in Ireland. The one regrettable fact is that the British Society has never quite forgiven the Irish taking the title "pharmaceutical chemist"—the very title which the slow working of time is evolving as the single title for Great Britain—and although the Irish Council have on various occasions indicated a desire for reciprocity of certificates or equalisation of qualification, they have not been able to break through the cold surface of the British reserve. Without the influence of the Conference, which is absolutely independent of either of the Societies, there would not to-day be so much good-fellowship existing between the pharmacists of Great Britain and Ireland; and Mr. Payne's conduct in the chair will go far to cement the friendship.

The Sale of Food and Drugs Bill.

THE Government seem determined to get the Sale of Food and Drugs Bill off their hands before the end of the Session, and they are entitled to no little credit for intelligence and open-mindedness in meeting the many suggestions and attacks with which the progress of their amending measure has been greeted. There is, of course, the possibility that the House of Lords or some of its members may take a curious interest in the Bill, and it is certain that efforts will be made by some energetic groups of traders to get the points raised in the Upper House which have been defeated in the House of Commons. But the probability is that the Bill as it now stands is pretty much how it will appear as an Act, and in that case the inclination of the critic will be to treat it unceremoniously as a miserably scanty outcome of a vast waste of discussion and testimony. The Select Committee of the House of Commons on Food Products Adulteration sat for three Sessions, met thirty-three times, and examined sixty-eight separate witnesses. Sir Walter Foster was the first President, and he was succeeded, when the Government changed hands, by Mr. T. W. Russell. Neither of these gentlemen showed much grip of the difficulties, and the report issued in 1896 was an amiable attempt to agree with most of the views which had been brought strongly before the Committee. But Mr. Chaplin, the President of the Local Government Board, and Mr. Walter Long, the President of the Board of Agriculture, have both shown an appreciation of the difficulties and dangers of legislation on the lines insidiously proposed by protectionists, by analysts, and by frantic faddists, to a certain extent endorsed by the Committee in their report. The Board of Reference first suggested by certain public analysts as a means of protecting their certificates from unkind contradiction at Somerset House became the sheet-anchor of the provisional measure suggested by the Select Committee, but neither Mr. Chaplin nor Mr. Long has looked on it with favour. We have always pointed out that it would have been a dangerous scheme for traders, and we are glad to believe that it is by this time hopelessly discredited. The advocates of this and other risky proposals fought very hard for them in the Grand Committee, and with partial success. But in the House of Commons several dangerous innovations have been removed, and if Mr. Long may be taunted with the charge of having produced after all this work only an insignificant little measure, he may fairly reply, in the words of Burns—

What's done we partly may compute,
But know not what's resisted.

He is certainly to be congratulated on having kept out of the Bill many clauses which would have seriously imperilled the good work which the Act of 1875 has undoubtedly accomplished. Margarine fills a large space in the Bill, and it will be noted from the discussion which we reported last week that the Government had little to do in opposing the opponents of the provisions as they stand, as the opponents neutralised each other. This was shown well during the whole of the discussion on dairy produce. Democrats like Sir John Leng counteracted the tendencies of protectionists like Mr. James Lowther. Sir Charles Cameron was very much in evidence. His proposal that provision should be made for taking samples from wholesale dealers with a view of prosecution under the Act was considered by Sir R. Finlay to be unworkable. But Mr. Lough, Mr. Duckworth, and Mr. A. Cross, who have all had personal experience of business, insisted that it is practicable. We should like to agree with these gentlemen, but what chance would

an inspector have of getting an adulterated sample from a wholesale house? If he were unknown he would not be supplied, and if he stated what his purpose was he would be pretty sure to get what he asked for. Mr. Kearley tried to secure the same object as Sir Charles Cameron in another way—viz., by giving inspectors under the Act power to enter sale-rooms and warehouses and seize samples of food and drugs, or to take them at railway stations in course of transit. This would have the effect of stopping a great deal of sophistication at the fountain-head, and had it been enacted, it could have been made the means of paralysing a very large proportion of the produce trade of this country; but the majority was almost four to one against the proposal. It seems to the retailer that the House of Commons had expressly gone out of its way to protect brokers and wholesalers, and this appeared to be specially the case when Mr. Heywood-Johnstone, the member for Horsham, proposed to omit the words carried in the Grand Committee providing that all invoices should have the force of warranties. Mr. Long (who it will be remembered was interviewed by wholesalers on this point) approved of the amendment and voted for it, but said he would leave it entirely open for the decision of the House, which agreed to it by 119 to 42. Sir M. Hicks-Beach and Mr. C. T. Ritchie both voted in the minority. This decision will be a great disappointment to many traders, and we believe an attempt will be made to get the clause re-introduced in the House of Lords. But apart from the fact that it is not desirable to free retailers so completely from their responsibilities as seems to be desired in some quarters, it must be remembered that it is quite as possible and easy now, as it need be, to get warranties from wholesale houses, and that if the public are to get what they ask for and what they pay for, it is necessary to make the person who actually sells the guarantor. The retailer can quite readily apply the same principle to his vendor, and of this we report an example in our legal columns this week.

Plymouth Papers.

THE communications to the Pharmaceutical Conference this week are decidedly above the average in number and value. Several of the papers are likely to be historic, and the best feature about the whole of them is that they are truly pharmaceutical. The Conference may now fairly be put as the premier British body for the criticism of the technical processes connected with pharmacy. At one time it was a humble follower of the Pharmaceutical Society of Great Britain in that respect; then it rivalled the latter; but now the administrative body is quite out of the running, and it is curious to note that this circumstance dates from the establishment of the Pharmaceutical Research Laboratory. The Conference success is due to the absolutely non-partisan conditions which it presents. There are many workers outside the Society who feel that they are not welcomed if they offer contributions to the evening meetings, but at the Conference there is no such feeling. It is therefore to be deplored that the Conference has not the financial support which it deserves. Experience has proved that numerical support is unnecessary, and it is worth considering whether the subscription should not be increased to 10s. a year, seeing that the membership has been reduced nearly to the limit of loyal supporters.

On account of the fact that a large portion of this issue of THE CHEMIST AND DRUGGIST is being printed while the Conference is proceeding, we have been compelled to alter our time-honoured method of reporting the proceedings. The summaries of the papers on this occasion preface the

discussions thereon, and the papers themselves, with one or two exceptions, are printed ahead of the proceedings with all the manipulative details which authors are so fond of putting down. Those who wish to master the gist of the whole matter quickly should therefore read first the section of our report entitled "Conference Proceedings" and take the fuller texts at their leisure. It says much for the progress of pharmacy since the Conference last met in Plymouth, and something for the trade-journalism, that our report on this occasion occupies almost four times the space that the report of 1877 did. The papers are better too, and the discussions, on the whole, as good as they were when the late Professor Redwood—a prince of debaters—guided the speakers. We find in our perusal of the papers that some writers have yet to learn a number of things in regard to the manner of presenting results. Most of them are by far too "windy." There seems to be a disposition, amounting almost to mania, to present results in table-form. This is really due to force of example. We select Messrs. Farr and Wright as typical culprits, because they are gentlemen of distinction, who will be less tender to criticism than the younger contributors. In writing on syrup of tolu balsam they give the cinnamaine values of hard and soft balsams in a table which occupies an inch of space. In the case of hard balsam the residue was 4.35 per cent and cinnamaine 4.28 per cent., and for the soft 8.55 and 8.04 per cent. An audience has to be told the facts as we tell them, and a table does not do it so well. A table is a useful way of contrasting half-a-dozen or more results under different heads, and when it is used it should be with the object of avoiding much comment. The factors are given for the benefit of workers in the same field, and it is to be presumed that they are men whose knowledge renders explanations unnecessary. It would be greatly to the advantage of everybody if writers were not so solicitous of resurrecting recorded facts to eke out otherwise concise communications. In reading papers it suffices to state broadly what has already been done, then to give one's own results, and for publication-purposes references may be attached to the broad statements. Another matter to which attention should be directed is the almost universal fault of omitting the cypher from decimal fractions of the unit. This is a thoughtless and incorrect practice, which frequently leads to errors, especially if the fractions do not occur in juxtaposition with others. The smashing of the decimal point during printing is not uncommon, and with such a factor as .12 it may be disastrous, but with 0.12 it matters little, for the space between 0 and 1 remains. Lastly, we would suggest that it would be a great advantage if contributors to the Conference would adopt the practice which obtains in the Chemical Society and similar bodies of writing an abstract of their papers. Were this done it would be possible for the Secretaries to present the members at the beginning of each session with a printed summary, so that unnecessary speech-inquiry would be curtailed and useful discussion fostered.

Will Opium be Dear?

THE opium-market is at present in a very firm condition both in London and Smyrna, but the conflicting reports regarding the out-turn of the new crop issued from the principal trade-centres, chiefly Smyrna, again make it difficult to estimate the future course of this important drug. The letters and telegrams from our correspondents at the latter place which we have published during the past three weeks will have prepared our readers for the advances

in prices of opium which have taken place. As far back as May it was reported that we were to have a bumper crop—something like 10,000 cases—but this was due more to the Oriental's imagination than to his intelligence. Since then the estimate has been gradually reduced week by week, and it now seems the almost unanimous view that the prospective yield for all Turkey will not be more than 6,000 to 6,500 cases at the outside. Still, if these figures are correct, it will be a fair average crop, and an excessive one compared with 1898; for then the total output of the Turkish crop was only 2,500 cases. For the sake of comparison we give the figures for the last ten years:—

Years	Cases	Years	Cases
1898	2,500	1893	2,845
1897	7,000	1892	7,500
1896	3,600	1891	7,400
1895	7,500	1890	5,300
1894	4,500	1889	5,500

The stocks of opium in Smyrna, Constantinople, and in the interior of Asia Minor do not exceed 2,000 cases, and, according to our correspondents, a fair part of this is in the hands of speculators or the "syndicate," who will hold out as long as they possibly can. It is exceedingly difficult to estimate what the London stock is, as no official returns are published; but one gentleman prominently connected with the trade here states that the stock at the Bull and Red Lion wharves, where the London opium-supply is chiefly stored is the lowest that has been seen here for the past eighteen years. How large the stock may be in the United States is not exactly known, but according to advices from that country the stocks in the hands of local dealers are small, and as a matter of fact, the United States have made few purchases on the Smyrna markets during the past six months. They have pursued a hand-to-mouth policy from January to June, the consequence being that purchases have been made in dribbles. During the past fortnight, however, the market there has advanced in sympathy with Smyrna, although no consumptive demand has set in. We expect to hear by almost any mail that Americans have entered the market, and when they do there will be the usual flutter in Smyrna, and to a smaller extent in London. It will be interesting to know what tactics they are going to pursue this season. The question naturally arises, What effect will the present crop have on the future market course of the drug? Last year, when the crop was 2,500 cases only, the market did not rise, and prices have been at variance with the laws of supply and demand—due, however, to the fact that there was a good supply of old crop left over when the season began.

The keynote to the position is to a great extent to be found in the following sentence from a Smyrna correspondent's letter in our Trade Report:—"As our bankers advance over 80 per cent. of the cost, holders will keep firm until there is a total absence of business for two or three weeks." It is well known that ready money is scarce in the Turkish Empire, and that the banks act as pawnbrokers to the needy and impecunious holders. They also follow the market as close as any dealer, and as soon as they find they have invested a sufficient amount they will refuse (if there is an absence of business) to accept any more opium-deposits, and at this point the reaction will be apparent. It would therefore seem to be the policy of European and American buyers to stave off their purchases as long as possible, or buy only for immediate requirements until arrivals of new opium have accumulated in Smyrna. At the present time, 551 cases of new have arrived, against 170 only last year (confirmation of which we have received from two correspondents), and if they continue at the present rates, a decline may come within a month if

consumers can afford to play the waiting game. But can they, in view of the present stocks in London and the United States? We think not, so far as the U.S. is concerned.

Cape Pharmacy Bill.

THE Cape of Good Hope *Government Gazette* of July 4 contains the text of a Bill to repeal certain sections of the Medical and Pharmacy Act, 1891, and to make other provisions in lieu thereof, and to extend the provisions in regard to the Colonial Medical Council and Colonial Pharmacy Board. The Bill is in many respects similar to the one drafted and published on May 18, 1898, to which full reference was made in the *C. & D.* at the time. The first, second, third, fourth, and fifth clauses are the same, with the exception of a few minor alterations dealing with the election of the Council and Board being introduced. Amongst alterations is one giving the Colonial Secretary power to publish the names of candidates for seats on these bodies, and generally to regulate the method of election in a more precise manner than at present obtains. The sixth clause of the 1898 measure is also reproduced, this including the provision that no poison shall be sold to any person under the age of 15 years unless upon the prescription of a medical practitioner. The seventh clause of the former Bill contained the following provision relating to medical practitioners acting as druggists, which the drug-trade of the Colony opposed, and it has now been dropped:—

And upon payment by any such medical practitioner of the annual licence-fee required by law to be paid by a chemist and druggist (in which case he will not be required to pay the fee before mentioned in this section), he shall be further entitled under such licence, or any renewal thereof, to practise generally as a chemist and druggist, subject to any provisions relating to chemists and druggists contained in the said Act: provided that he shall not be entitled to dispense medicines prescribed by any medical practitioner other than himself or any medical practitioner with whom he is in partnership or with whom he is professionally associated either as principal or assistant.

The eighth clause formerly provided that every shop purporting to be a chemist's shop should be conducted under the constant and personal supervision of some registered chemist and druggist, but in the new Bill the words "purporting to be a chemist's shop" have been omitted, apparently because they were redundant, there being in the third clause of the measure a definition of what a "shop" is—viz., an open shop for the sale of medicines. The ninth or prescribing clause has also been modified. Formerly it was stated that no person should be entitled to "medically treat persons, or prescribe medicines," by reason of being registered as a chemist and druggist, but the words "or prescribe medicines" have now been omitted as a concession to the claim of chemists that they are perfectly entitled to prescribe in simple cases. The tenth and eleventh clauses deal with the registration of midwives, the twelfth with dental matters, and the thirteenth with the regulation of fees. The fourteenth clause is devoted to the correction of improper or unprofessional conduct on the part of any persons amenable to the Council or Board, and if this clause passes without modification the Cape Board of Pharmacy will be the first in the British Empire to have control over its licentiates to the extent of removing their names from the register. The fifteenth clause in the 1898 Bill has been extended by the addition of the sentence in italics here appended:—

All chemists and druggists shall prepare their medicines according to the British Pharmacopœia unless otherwise directed by the prescribing medical practitioner: *provided that it shall be lawful for the Governor by proclamation,*

on the joint advice of the Council and Board, to determine what edition of the British Pharmacopœia shall be used, and to authorise such alterations in the preparations mentioned therein as may be found necessary to meet the special climatic conditions of this colony.

This is, as far as we can recollect, the first time that any colony has asked authority to alter the formulas of the British Pharmacopœia. It is a reasonable request, and is an earnest of sympathy with the proposed Colonial and Indian Addendum to the B.P.

The sixteenth clause is the famous patent or proprietary medicine one, which in the 1898 Bill purposed to secure that every such medicine should bear a label stating the nature and quantity of each ingredient composing it. We strongly opposed the clause at the time, and our representations to Sir Alfred Milner and the opposition of the home trade have had effect, for the clause now refers exclusively to patent medicines containing poisons—which was the direction in which we considered that labelling might be demanded. We give this clause as amended, the words in italics being new; and it will be observed that the Bill brings poisonous patent medicines exactly in line with other poisons. As amended the clause is not really objectionable, except that the statement of the quantity of poison upon the label is a novel provision, and may be resented by some manufacturers of these preparations:—

From and after a date to be proclaimed by the Governor, which shall not be less than six months after publication in the *Gazette* of his intention to proclaim such date, every patent or proprietary medicine intended for human use *and containing any poison mentioned in the third schedule to this Act* shall bear upon the bottle, case, or other package immediately containing such medicine, a true and exact statement setting forth the nature and quantity of *each such poison* contained in such medicine, and any person selling or keeping for sale any such medicine not so labelled shall be liable, upon conviction, to a penalty not exceeding [fifty] pounds, and in default of payment to [six months'] imprisonment, with or without hard labour: *provided that it shall be lawful for the Governor, after giving six months' notice in the "Gazette" of his intention so to do, to declare any article mentioned in such notice to be a poison within the meaning of such schedule.*

For the purposes of this section the provisions of the twenty-first section of the Act No. 5 of 1890 shall apply mutatis mutandis to such medicine.

It is to be observed that it will be expedient (should the Bill pass) for the protection of Cape retailers that poisonous proprietary medicines should be labelled by the makers of them, as the moment they go into stock they come within the law.

The seventeenth and eighteenth clauses, with the schedules, complete the Bill, and the third of the schedules is the list of poisons, which is substantially the same as the British one except that, in the second part, cocaine and carbolic acid are mentioned. We understand that the Government does not propose to push the Bill during the present Session of the Legislative Council.

"SMART" TRAVELLERS.

Some knights of the road mistake vulgarity for smartness. A subscriber sends us a postcard which he received last week, which was to the following effect:—

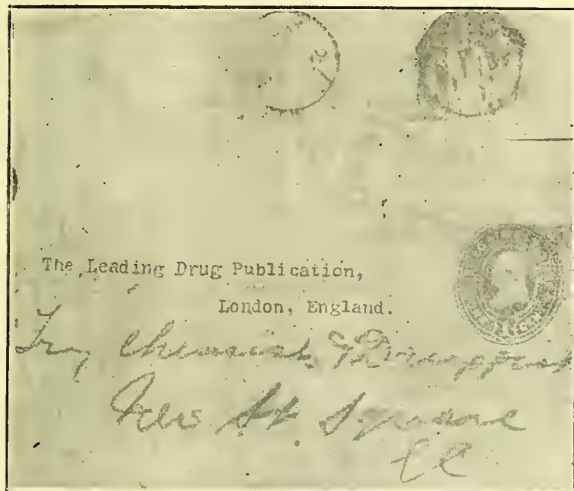
Dear Mr. —,—Having to stay at B— for a time, to-morrow (Friday) I hope to "just pop in"—à la Paul Pry. There *may* be some "sma' mercy" in my line. Hope so, 'cause times is 'ard! Please look round for your *aged* friend, and oblige. Kind regards, hoping *all* are well. Mo. resp. yours,

There is an indication on the card of a firm's name—not one of the leading houses in the trade, we are happy to say—

but we strongly advise such gentlemen as this to take a hint from the leading inset in this issue in regard to advice-notice. The fact that this postcard has been sent to us shows the contempt with which chemists and druggists receive such "smart" communications. In this case the impudence was aggravated by the fact that the receiver had shown courtesy to the sender.

A LEADER.

Last Saturday morning we received by the American mail a copy of an American journal addressed as follows:—



There was no delay in the delivery. The sender of the journal is unknown to us, but appears to be a senega-digger in the United States, who is desirous that we should know the condition of the crop, all of which, however, has already been told in our Trade Report. In Messrs. Barron, Harveys & Co.'s brochure there is a parallel case to this which happened to them many years ago.

PREPARATIONS FOR THE HOLIDAY SEASON.

One of the pests of the holiday-maker during the next two or three months is the so-called harvest-bug. He is only a bug in the sense used in America to denote insects in general, the place assigned to him by scientists being the division *Acaridæ*, class *Arachnidæ*. For some unknown reason, this pest is most in evidence on chalk soils and in the far North of Britain. Medical authorities recommend the digging out the parasite with a needle, but a harmless lotion that would prove obnoxious to the creature and efficacious in the matter of ordinary bites and stings from winged insects in general would be a valuable addition to the chemist's counter, without exciting any of that jealousy of the prescriber of which we have heard so much of late. In an agricultural paper a correspondent, signing himself a "seaside chemist," recommends soaking the stockings in a very dilute carbolic lotion, to which a small proportion of glycerin has been added. Benzine answers the purpose for a time, but its volatility makes it of less value than flowers of sulphur, which is objected to as a remedy by certain eminent authorities, and by some who use it, on account of the unpleasant exhalation which it induces from the skin. A good all-round remedy, both as a preventive and cure of bites and stings, has yet to be found.

A RESUSCITATOR—"Did that stuff revive you?" asked the attending physician of his impatient patient.

"Revive me, doc? Good heavens! three doses of that medicine would resuscitate the dead languages."—*Detroit Free Press*.

Reviews.

A Manual of Materia Medica for the Use of Students, Druggists, Pharmacists, and Physicians. By JOHN M. MAISCH. 8 x 5. Pp. vi + 528 Philadelphia: Lea Bros. & Co. London: Henry Kimpton 10s. 6d.

THE late Professor Maisch's "Students' Manual of Materia Medica" is quite a popular book in this country with pharmaceutical students, and is recommended by all the leading schools of pharmacy, although it happens not to be written especially for British students. The reason for the liking is that the manual is clear in its descriptions and comprehensive so far as the subjects are concerned, while the illustrations are certainly not the least instructive feature of the work. Mr. Henry C. C. Maisch has undertaken the preparation of the seventh edition, and he brings to bear upon the work not only intimate knowledge of the subject, but that appreciation which comes from close association with the author. Mr. Maisch was actively engaged with his father in his materia-medica researches, and was of particular assistance to him in the preparation of microscopic sections of the important drugs, so that he comes to the work well qualified for the task, and we are not disappointed in perusing the work to find that his acquaintance with materia medica is not superficial. The book has not been changed in regard to order and treatment of the subject. Part 1 deals with animal drugs, and is confined to somewhat under twenty pages. Part 2 is devoted to cellular vegetable drugs, beginning with roots and ascending upwards to seeds. Part 3 is on drugs without cellular structure, such as extracts, sugar, gums, resins, fixed oils, and waxes. Then follow lists of drugs arranged according to origin—that is, in natural orders—and alphabetical index. In treating each subject the origin of the drug, the part of the plant, or other organism from which it is derived, a description of it, the structure (which is generally illustrated by microscopic sections), varieties and substitutes, properties and doses are given. We have gone over the book carefully, and find that it maintains its utility as a students' manual; but it is right to point out that there are some errors to be found on matters of importance which Mr. Maisch should be careful to eliminate from subsequent editions.

A Short History of the Progress of Scientific Chemistry in our own times. By WILLIAM TILDEN, D.Sc., F.R.S. London: Longmans, Green & Co. Crown 8vo. 5s. net.

ONE of the inevitable associations of the Diamond Jubilee was the practice of sketching the progress of their pet sciences during the preceding sixty years by professors and lecturers. Among them Professor Tilden, of the Royal College of Science, gave a course of six "Lectures to Working-men," surveying the history of scientific chemistry during the Queen's reign. Out of those lectures the volume whose title we quote above, consisting of an introduction and ten chapters, has developed. It would perhaps be difficult to explain the exact distinction between scientific chemistry and any other sort of chemistry. To write a complete history of the former would certainly involve many references to the guesses at truth which constitute what we suppose a modern professor would characterise as unscientific chemistry. The youth at the examination who stated that the best food was a mixture of carbon, hydrogen, and oxygen, with a pinch of nitrogen, had evidently been taught scientific chemistry, but perhaps had not been taught it scientifically. To leave out the unscientific gropings and guesses by which the true science was ultimately reached is to deprive the history of much of its interest, and, as a history, of much of the instruction which it might afford. Professor Tilden deals with the discoveries and theories of the past sixty years with expert knowledge, and narrates them for the most part in a succinct and lucid style. But it can hardly be pretended that the results attained by a multitude of workers during these six decades have approached in dramatic attraction those of the comparatively few geniuses who placed the science on a firm footing during the preceding half century. For the general purpose of placing the modern inquirer abreast with the theories which recent investigators have elucidated from the vast

array of facts observed by themselves and their contemporaries, Dr. Tilden's review will be found of extreme value. To indicate the nature of his work we cannot do better than quote the headings of the ten chapters into which the treatise is divided. They are:—1. Matter and energy. 2. The chemical elements: their distribution in nature and recognition by the chemist. 3. Rectification and standardisation of atomic weights. 4. Numerical relations among the atomic weights: classification of the elements. 5. Origin and development of the ideas of valency and the linking of atoms. 6. Development of synthetical chemistry. 7. Origin of stereo-chemistry: constitutional formulæ in space. 8. Electricity and chemical affinity. 9. Discoveries relating to the liquefaction of gases. 10. Summary and conclusion.

These topics obviously afford the opportunity for large slices of learning, and Dr. Tilden supplies this with no niggard hand. The division of his subject into all these branches destroys the conception of the gradual growth of the science as a whole, which it seems to us might be presented by some chemist as much master of his subject as Dr. Tilden is, and which perhaps one day may be delineated for us; but the plan adopted enables the author to deal with each section more exactly and concisely than he could do if he had attempted to work under the more truly historic method. Dr. Tilden suppresses his enthusiasms with a good deal of rigour. Perhaps the nearest approach he makes towards any is in the chapter in which he describes the development of the theory of the periodic law, in which, by the way, he gives full credit to the pioneer work of Newlands. But he has certainly produced a work for which he will be sure of securing the gratitude of the many students of chemistry who despair of mastering all the intricacies of modern researches.

An Introduction to Dermatology. By NORMAN WALKER, M.D., F.R.C.P.E. Bristol: J. Wright & Co. $8\frac{1}{2} \times 5\frac{1}{2}$. Pp. 247, with 29 plates. 8s. 6d. net.

THIS volume is one of the smaller of the recent text-books on skin-diseases. It is based on the yearly course of lectures delivered by the author. Throughout the work he closely follows the teaching of the continental schools, and especially that of Unna. The classification is to as great an extent as possible a pathological one, and special prominence is given to the microscopical appearances of the various lesions. The introductory section deals chiefly with the general principles of treatment, and the various vehicles for medication are described. Then follow chapters on the anomalies of sensation, of secretion, and of circulation. Chapter V., dealing with the inflammations, is the most important in the work. Eczema and the infective conditions, ringworm, &c., being treated at considerable length. Chapters on new growth, malformations, and retrogressive changes complete the work. Throughout the treatment is fully given, both dietetic and medicinal; in most instances the formulæ are printed in full, with adequate directions for their compounding where such are necessary. The plates, especially the coloured ones, are clear and good, and the volume as a whole well got up. To those who desire a good practical knowledge of the more common forms of skin-diseases Dr. Walker's book should be a valuable guide.

An Epitome of the History of Medicine. By ROSWELL PARK, A.M., M.D., Professor of Surgery, University of Buffalo. Second Edition. The F. A. Davis Co., Publishers, Philadelphia. $6\frac{1}{2} \times 9\frac{1}{2}$. Pp. xiv + 370. \$2 net.

THAT the second edition should have been called for within a year of the first appearance of this work speaks well for its usefulness. Dr. Park has an interesting subject, and treats it in a popular way, so that it appeals no less to the layman than to the educated physician. Chronological order has been observed for the most part. Following Renouard, he divides the history into three ages: the age of Foundation, down to the year 200 A.D.; the age of Transition, down to the year 1400; and the age of Renovation, bringing the work down to the establishment of the anti-septic era. In the first the old systems of Dogmatism, Methodism, Empiricism, and Eclecticism are explained, and the writings of Hippocrates, Celsus, Galen, and others reviewed. The age of Transition is less rich in results; but the age of Renovation, and particularly

the later part of the Reform period, is very fully epitomised, few names of any note being omitted. There are also separate chapters on anæsthesia and antiseptics. If any criticism has to be made, it is that the author has introduced too much, but in an epitome this may not be out of place. The history will be useful to the student as an introduction to the subject and for most it gives all they will require. The book is well got up, and the illustrations, chiefly from old engravings, are fairly well reproduced. There is an ample index.

Analysis of Food and Drugs. Part II. The Chemical and Biological Analysis of Water. By T. H. PEARMAIN and C. G. MOOR. $8\frac{1}{2} \times 5\frac{1}{2}$. Pp. viii + 172. London: Baillière, Tindall & Cox. 5s. net (paper covers).

A GOOD introduction to this subject. The classification of waters, collection of samples, physical examination, chemical examination, the bacteriology of waters, law relating to water-supply, and aerated table-waters are treated in succession, the text being adequately but not ambitiously illustrated. The monograph forms part of a good working book. The chapter on aerated waters is a reprint of an article which appeared in the *Medical Press*, and is really a series of analytical testimonials to several manufacturers, therefore mere "padding."

Les Nouveautés Chimiques pour 1899. Par CAMILLE POULENC. 8×5 . Pp. 364. Paris: J. B. Baillière et fils. 4f.

DR. POULENC has now for several years collected together the best examples of new laboratory apparatus and new methods of research employed in applied science and industry. The collection is derived from all quarters, and the description of each piece of apparatus is accompanied, where possible, by an illustration, the method of working it, and the results obtained. The present volume contains 196 figures in the five parts into which the volume is divided—viz, Applications générales de la physique à la chimie, Appareils divers du laboratoire, Analyse chimique, Electricité, et Bactériologie. The second and third chapters are the fullest.

Hagers Handbuch der Pharmaceutischen Praxis für Apotheker, Ärzte, Drogisten, und Medicinalbeamte. Unter Mitwirkung von Max Arnold (Chemnitz), G. Christ (Berlin), K. Dieterich (Helfenberg), Ed. Gilde-meister (Leipzig), P. Janzen (Perleberg), C. Scriba (Darmstadt). New edition by B. FISCHER (Breslau) and O. HARTWICH (Zurich). Berlin, 1899: Julius, Springer. In 20 parts; each 2m.

THE other day a correspondent asked us, "What is the German equivalent of 'Dorvault'?" and with promptitude we replied "Hager." There is no exact English equivalent except Redwood's "Grey." "Hager" is an extraordinary mine of information upon every medicinal subject. Its drawback is that it is printed in German, a language which too few English pharmacists are familiar with; yet it is astonishing how many who confess their ignorance of German are well acquainted with "Hager." This is because the titles and formulæ are all in Latin, and English, French, Latin, and other synonyms are given in the titles. This new edition of the work, which Drs. Fischer and Hartwich are preparing, seems to us so far (we have received five parts) a distinct advance upon the last edition. Everything is up to date especially the scientific facts and the working formulæ, which threaten to be even more numerous than in the original edition. For the benefit of those who do not know "Hager" we may explain that it is a pharmaceutical encyclopædia far in advance of Cooley. Under each substance its origin or method of manufacture is explained, the testing, commercial varieties, method of using, and other similar information, and the monograph concludes with formulæ of official and unofficial preparations of the substance which may be regarded as of international importance. In the last section special attention is given to nostrums, and as far as we have been able to judge the attempts at penetration of the mysteries are more likely things than those in the last edition. Part 1 begins with Abelsonschus and ends with Acidum valerianicum; Part 2 ends with Ammon. molybden.; Part 3 with Arsenum; Part 4 with Cacao; and Part 5 with Caro (flesh). The work is copiously illustrated.

The Art of Alchemy:

BEING SOME REFLECTIONS BY AN ARTIST UPON ALCHEMY AS IT IS PAINTED.

The Winter Number of THE CHEMIST AND DRUGGIST contained a little oil medallion of the alchemist of the past in juxtaposition with the chemist of to-day, and this has tempted Mr. F. C. Tilney, an enthusiast in such matters, to make some investigations into the art of the subject, and his reflections throw fresh interest upon a somewhat hackneyed theme.

I.

IT may unmistakably be inferred from the works of some painters that alchemists and doctors have been regarded now and then with suspicion. A work by Jan Steen is engraved under the title of *Les Souffleurs et le paisan credule* (*Souffleur* being the old name for a seeker of the philosopher's

paissan credule, counts her spare cash. Many other instances might be cited to the same end. On the other hand, those pictures which represent doctors in evident good faith are in the majority. The "Water-doctor" is a favourite theme with the Dutch painters, who unblushingly include all the accessories. The number of prints that show a physician with one hand holding the glass vessel up to the light, and the other on a lady's pulse is quite astounding. There is "A Chemist" by F. Mieris, which is quite devoid of satirical intent. There the man of science watches through eye-glasses his intelligent looking assistant who causes, by the insertion of the nozzle of a bellows, the ebullition of a liquid in a cauldron without the help of fire, and a brick furnace near seems to be out of use and cold. At



PETER BRUEGHEL'S "ALCHEMIST."

stone—a term having reference presumably, to the bellows), and has inscribed beneath it the following stanza:—

Aux larmes de ta femme insensible butor
Crois-tu de ses bijoux faire sortir de l'or?
Ce Métal précieux est produit par la Terre
Et jamais le Creuset n'en peut être le Père
De ces vils Imposteurs évite les appas
Ils promettent beaucoup, mais ils ne tiendront pas.
LECLUSE.

In the picture the vile impostors who have emptied the pouch and purse of the foolish woman are endeavouring, in spite of her tears, to justify their transactions. On the part of both painter and engraver the work may be taken to be meant as a censure. The same artist has a picture of "A Mountebank Dilating on the Virtue of his Drugs." Adrien van Ostade has a similar subject entitled "The Charlatan." Gerard Dow likewise painted "A Charlatan" and "A Quack Doctor." Under the title of "Le Plaisir des Fous," Basan engraved Tenier's picture of a monkey blowing under a crucible. In Karel du Jardin's "Charlatans," a man with a black face plays a guitar to attract customers to the booth where the quack holds forth, displaying his salves; a third man slyly peeps from behind the curtains, and another

the end of a bench is a vice of exactly the form in use to-day and near it is an anvil upon a tree block; showing to what an extent those crafts, which have now become so differentiated, were worked hand-in-hand more than three centuries ago. Stuffed monsters and other paraphernalia are altogether absent in this orderly and legitimate workshop.

PICTURES ARE NOT DOCUMENTS.

There are a great number of paintings and engravings which deal with alchemy, medicine, philosophy, astrology, and other subjects—all at one time kindred; but their value as documents cannot be appraised without a little critical consideration. It is not difficult to see how much in these works the artist owes to his own observation and to the accretion of facts at second or third hand, or how much also to his imagination and the exigencies of picture-making. As to personal observation, it would seem that the inner processes of an occult science would be so hidden to all beyond the guarded precincts of the laboratory, that only hearsay could impart to the eager artist a knowledge of ways and means sufficient to serve him as material for his work. He might, perhaps, supplement this by viewing his own kitchen fireplace, with its chimney-hood, the bellows,

and the humble pipkin, in the light of the more elaborate apparatus he wished to portray. That habit of all-round appreciation and interested regard of whatever meets the eye—the dowry of the best graphic artists in all ages—would enable him not only to do this, but likewise to gather pictorial suggestions from the quasi-scientific preparation of his own colours, grounds, and mediums. He would, at any rate, invent something that would be sufficiently like an actual scene to satisfy the no better informed minds of his patrons and critics; and tradition itself would supply those conventional details without which the subject might be thought to miss a proper rendering. Of absolute realism, as we understand the term in these days, there would certainly be none, since all pictures of this class were painted in the studio. This no doubt explains the fact that in the works of the Flemish and Dutch masters we see the pursuit of abstruse science going on in the midst of distracting circumstances which, if they ever occurred at all, might surely have been avoided. The anomaly is probably due to a wish to contrast the abstracted air of the alchemist with the fussiness of a housewife or the pranks of children, besides being traceable to that love of human interest and episode, so strong in the Dutch painters, which led them to insert figures and groups of less importance in the backgrounds of their compositions.

Looked at in this light, there is little wisdom in accepting

naivety and evident absence of deliberate elaboration. It shows an orderly chamber, of a monkish atmosphere, where the principal sits at a table occupied with a balance,



"THE ALCHEMIST," BY DAVID TENIERS THE YOUNGER.

and although the picture is four or five hundred years old the balance closely resembles the kind in use to-day. The work of art occurs upon an exquisitely-coloured and gilt page

which embellishes a 15th-century manuscript entitled "The Ordinal of Alchymy," by Thomas Norton, of Bristol. It is a small vellum quarto, having at the commencement of each chapter an illuminated leaf that comprises a picture surrounded by a floral or scroll design. A quaint couplet is written at the top of each picture, which at Chapter V. reads: "The chapter following conveniēt for a clerk Shewith the concols of the subtile werk." The inscriptions on the ribands are "Componelapidem alisque repugnancia," "Seperabis terram ab igne subtile aspisso," "Mane prope vas nota colores." The Latin seems to share the general quaintness, but it will not balk the resourceful student.

Of the art of the following century



OSTADE'S "ALCHEMIST."

the majority of these paintings as records of the true ways of alchemists. There is, however, one graphic record which carries with it a grain of conviction by reason of its

PETER BRUEGHEL'S "ALCHEMIST"

may be next taken as an illustration of characteristic work. Brueghel was a Fleming, and it is to Flemish and Dutch

work that we must look for any wealth of subjects in the class we are discussing. He was the son of another Pieter Brueghel, known as Old Brueghel, Peasant Brueghel, or Brueghel the Droll, on account of the style of his work. The son, who by his diabolical and fantastic subjects likewise earned a nickname, was called Höllen (Hell) Brueghel. He was born at Brussels in 1564, and died at Antwerp in 1637. His picture of the "Alchemist," now in a private collection at Antwerp, is in many ways one of the most remarkable of the series. It shows the visionary, dead to all marital and parental obligations, enthusiastically engaged in the search for gold—even to the extent of doing two things at once—seated in a comfortable and barn-like chamber that is crowded with the apparatus of his pursuit. His poverty is apparent by his ragged clothes and the empty pocket of his wife, and by the fruitless search for food of the children in the cupboard, with whom hunger is so familiar a sensation as to afford opportunity for play. A door taken from its hinges does duty as a bench, and a partition has probably been broken away to serve for fuel. The only figure in the picture who does not appear to share the general discomfort is the learned man, sitting in superior robes, on a new settle at a new desk, declaiming passages from perhaps another "Ordinall of Alchymy." He it is, we may imagine, who prompts the unhappy man to cast his little wealth into crucibles, and he alone it is who manages to recover it. Through the opening in the wall we see again the poor fool and his wife with the three youngsters, one of whom still retains the pot upon his head, with evident enjoyment of his little joke—an ingenious ruse, we suspect, for the better identification of the group. M. Emile Michel sees in this inner picture an epilogue that shows the family reduced to beggary from door to door.

One of the engravings of this picture shows its various parts labelled with explanatory or reflective phrases. Thus, on the apron of the alchemist is the name Pieter Pover; on the woman's garment are the words "Lys heb niet." The man at the desk is Doctor Loshooft. Over the furnace is read "Mineralis," "Animalis," "Vegetabilis," bracketed against the word "Lapis." "Aqua magistralis" appears on the large alembic to the left. The two tall vessels to the extreme left are inscribed respectively "Virginis" and "Iac." "Lutum sapientie" is written on the heap of stuff under the brickwork in the corner; and the bag near it is labelled "Drogerij." "Elixir" is what is spilt out of the overturned crucible. "Sulfer" and "Keue" are the contents of the jars on the extemporised bench, and "Mercurius" of the alembic in the same place. The bellows in use has upon it "Al-wint, Spes," and the unused bellows, "Malcontent." On the desk are inscribed the names Hermes, Geber, Albertus Raymōdus; and on the stool the word "Vanitas." The house in the landscape is a "Gasthuys," and above it is the term "Al-Gemist." "Hospital" is over the door, and the path is "Calis Bende." The same engraving bears an old Dutch inscription in rhyme, to the effect that the alchemist wastes very much time, gold, goods, and treasure; has neither rest nor quiet; sees in the fire no benefit to himself, but only his own undoing, and in the end a poor man, he starves in a work-house.

"ALCHEMISTS," BY OSTADE AND TENIERS.

On December 10, 1610, a baptising ceremony took place at Haarlem. Five days after another baptism was performed at Antwerp. The baby at Haarlem emerged rejoicing in the name of Adriaan Jansz Hendrik; the other baby took his father's name of David Teniers. Adriaan, however, subsequently adopted the surname of Ostade, and is always known in the world of art as Adrian van Ostade. His five days start in life ended in a victory of five years for David; the one being buried in May, 1685, and the other in April, 1690. Attaining to the highest rank of painters, these two artists were, at the best period of their career, the authors of the pictures from which our next two illustrations are reproduced—the most important representations of our subject, perhaps, that the world has seen. Ostade was the pupil of the great Franz Hals, and, in his turn, became the master of Jan Steen. His pictures deal almost entirely with peasant-life, and are aglow with rich and mellow tones. Their drawing is skilful, colour subtle, light and shade exhaustive, and detail amazing; while the figures, though full of intensity and "go," are perfectly natural in pose and action.

There are other works from his brush dealing with the same subject; but none excels the example reproduced here, the original of which is in the National Gallery, painted on a panel only 13½ inches high by 17½ inches wide, yet sufficiently large in style to occupy a modern mammoth canvas. It well repays leisurely investigation.

As is usual in most of these subjects, the fire seems to need much encouragement; but the old man's thoughts have gone ahead of the occupation of the moment. With an anxious apprehension he seems to contemplate his air-built castles. The pipe of happier moments is laid aside. The old folio is there, and our other friend the stuffed fish, together with the same glorious muddle of appointments upon which the artist relies for picturesqueness. There are three children, not two, as the catalogue says. The little girl, to the left with the dog, is looking in a cupboard for something to eat. Against the wall hangs a queer shovel, where the artist has placed his signature and the date 1661. That is nearly two-and-a-half centuries ago, and yet the centre-bit that hangs on the chimney could be found in any carpenter's bag, and the clay-pipe in his mouth to-day. The original shows the words, "Oleum et operam perdis" on the paper beneath the stool—a clue to Ostade's ideas upon alchemy. The words do not appear in the reduction.

This fine picture changed hands four times between 1737 and 1821, and twice was withdrawn from sale. Its value grew by the following leaps:—54*l*, 82*l*, 164*l*, 395 guineas. A Mr. Emmerson gave 800 guineas for it. Next it joined the collection of Sir Robt. Peel, and in 1871 became the property of the nation.

David Teniers, the younger, though in some ways a more remarkable painter than Ostade, does not carry that conviction in his work that appeals so strongly in the pictures of his contemporary. He was a marvellously skilful and rapid worker, turning out a composition of several figures in a few hours, in the midst of a fashionable circle of friends, whose conversation he shared. Lifted into prosperity by the Archduke Leopold William, he soon received the patronage of kings and princes. It is stated that the King of Spain built a gallery solely for his works. Prince John of Austria lived familiarly with him as a student. Like his fellow-worker Ostade, he was twice married—the first time to Anne Breughel, niece to Peter Breughel and an adopted daughter of Rubens. A man of great culture and polish, Teniers entertained the Spanish and Flemish nobility at his country seat at Perck with famous conversation and music parties; yet he found time to complete nearly 700 pictures. Precision of touch, with a sparkling effect, characterises most of his work, which, however, varies much in merit and style. It is not surprising that out of such a mass of paintings there should be more than forty dealing with our subject, which include, beside alchemists proper, any number of witches and tempted St. Anthony's, several doctors, a dentist or two, and even a chiroprapist. One picture is distinguished by the title "Doctor-Alchemist." Owls and monkeys, emblems of sapience and subtlety, frequently preside at surgical operations, perched upon a door or shutter.

In the picture we reproduce there is nothing very uncanny or mysterious. The bellows are again in requisition, and many other little matters are as we expect to find them. There are four or five different furnaces, and a profusion of alembics, jars, crocks and bottles that assort oddly with the fringed table-cloths, cushions, and ample curtain. These domestic accessories rob the scene of much earnestness and dignity. One has a feeling that either the adept has opened a chemical school in his sitting-room, or else has made a home in his workshop while the whitewashers are about. A curious blunder is noticeable in the large bellows at the end of the room, which are almost inflated to their utmost, although the lever is in such a position that the next downward pull of the man would tear them asunder were the power sufficient.

The fine composition of the picture is marred by the diffuseness of its detail, which is sprinkled and spotty rather than massed. The table is absurdly low, reaching only to the man's knee, and the entire work has an all-over air of unreality. In each of these respects it is decidedly inferior to the Ostade. The painting is on a panel 2 feet 7 inches broad by 2 feet 1 inch high. It is in the Dresden Gallery, and is valued at 300 guineas.

Une Pharmacienne.

WOMAN INVADES PHARMACEUTICAL PARIS, AND THE
"C. & D." CORRESPONDENT INTERVIEWS HER.

THE lady-pharmacist has invaded Paris at last, and the quiet and well-to-do suburb of Passy, familiar alike to English residents there and readers of "Peter Ibbetson," is happy in the possession of a pharmacy owned and managed by a member of the fair sex. She is the first, I believe, to take this venturesome step in La Ville Lumière. It is scarcely necessary to say that this enterprising young lady is not a Parisienne, or even of French nationality. I understand that she hails from the land of the Tzars, thus adding another link to the Franco-Russian alliance. Mlle. A. Fichtenholz took her diploma of "pharmacienne de première classe" in 1897, and has acted as the laboratory-assistant to several professors at the Paris School of Pharmacy, including M. Guignard, professor of general botany. She has also worked in the bacteriological laboratory of Dr. Roux, at the Paris Pasteur Institute. Her scholastic career has thus been more distinguished than that of the average pharmacist, and it includes a paper, read early this year before the Paris Academy of Sciences, on "A Mode of Action of the Bacillus Subtilis in the Phenomena of Denitrification." Her researches for this paper were made at the laboratory of botany of the School of Pharmacy here, under the direction of M. Radais.

I was naturally anxious to take an early opportunity to convey my congratulations in person to Mlle. Fichtenholz as soon as possible after the opening of her pharmacy, for she has taken new premises, instead of following the general custom of purchasing a going concern. So I cycled over to Passy one morning recently, and found the pharmacienne established in excellent premises at 72 rue de la Tour, opposite the rue Vital. On entering the shop a charming blonde young lady came forward to receive me, and, after making a small purchase, I inquired if she were Mlle. Fichtenholz, and was surprised to receive an answer in the affirmative; for I had expected to see a tall, staid, spectacled lady going towards middle life, but I found a lightsome creature young in years, and not of a grenadier's stature. Thus were my preconceived ideas pleasantly shattered. She spoke to me agreeably of her studies and work, and seemed to take a genuine delight in being the first lady-pharmacist in business in Paris. I noticed the care with which the *officine* has been fitted-up. The orthodox dispensing-counter and desk, of course, exist, while the whole of the interior is painted a cream colour—a tint very suitable under the circumstances, but quite unusual in Paris, and thus all the more striking. Next to the pharmacy proper is a laboratory, suitably arranged, which serves as a sitting-room and library. The exterior of the shop is painted in dark green, and has the usual inscriptions, including the information that the proprietress speaks English, Russian, German, Polish, and Italian. As I left Mlle. Fichtenholz handed me a small printed handbill, and from this I learn that she has styled her business "Pharmacie Internationale du Trocadéro"; while amongst the other announcements one reads "pharmacy for prescriptions, homœopathic and dosometric medicines, special laboratory for chemical and bacteriological analysis applied to the study of diseases, irreproachable products, and moderate prices." These are some of Mlle. Fichtenholz's claims to the patronage of the inhabitants of Passy, and as I bade her "good morning" an English lady-customer entered.

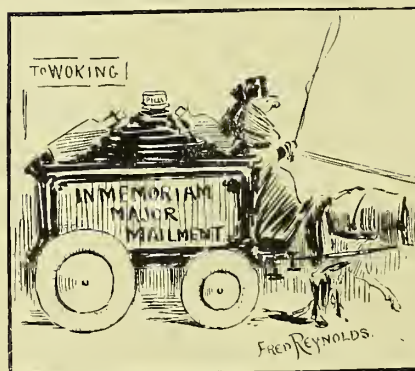
Mailment Redivivus.

ARTIST Reynolds,
Who the pen holds
With a free artistic quaintness,
Seldom showing signs of faintness,
Writes to say: "In Winter Issue
Tales are told to wear brain-tissue,

Melt the heart and raise the rafter,
Shake the sides with raucous laughter,
Ope the eyes in admiration,
Give the cue to all the nation;
But most worthy of retailment
Is the tale of Major Mailment."



Now this artist,
Wit the tartest,
Dashes off a pair of pictures,
Warning each one by its strictures
To avoid the direful plight he
Got into, this Major flighty;
Gulping med'cine, pulling faces,
Nursing hypochondriasis;
Till at length as none did mend him,
But eventually did end him,
He lay back, this earth revoking,



And was trundled off to Woking.
Graphic Reynolds,
Who his pen holds
With a quaintness most erratic,
Points the moral most emphatic
Told by Scott, his friend—and Mailment's,
Victim of so many ailments.

A CHEMICAL CHANGE.—Professor: "What happens to gold when it is exposed to the air?" Student: "It becomes a' nothing." Professor: "What do you mean?" Student: "It is stolen."—*Colorado Medical Journal*.

Our Town Traveller.

In a quietly residential part of genteel Clapham I chanced on the

LONDON COLLEGE OF CHEMISTRY, PHARMACY, AND BOTANY.

Glimpses of retort-stands, microscopes, and the weird-looking apparatus, which awed me so in bygone days ere familiarity bred contempt, could be caught through the open windows, and the impulse of curiosity drew me towards the door and to a hearty welcome by Mr. Henry Wootton.



A GLIMPSE OF THE BOTANIC GARDEN.

The first thing to be seen when the front door opened was an apparently interminable vista of flowers, green grass, and waving trees. My further impulse was to lie on the grass and look at the flowers, but Mr. Wootton's inexorable will took me to the ground-floor, which I found to be entirely fitted-up as a chemical laboratory. It is divided into two rooms—one capable of accommodating thirty-eight workers, the other a trifle smaller. The striking features of these laboratories—and, indeed, of the whole house—is the prodigality of light, ventilation, and space. There is no cramping; each student has plenty of room to move about, and yet has everything he requires at hand. Electric lights (which are in profusion from basement to attic) are fitted in the middle of each gangway above the student, so that an equal light is thrown down. The cupboard-doors are novel; instead of opening out in the usual way, they are constructed to slide down. Space is thus economised, and the

student has the advantage of an extra bench when the door is left open. The fume-chambers in this room have doors on the same principle.

With a lingering look towards the alluring garden we descend to the basement, where is a dispensary with twelve benches. Here also was abundance of sunlight, air, and electricity when it is wanted. Leading out of the main dispensary a nice cool storeroom for chemicals and apparatus not in use was discovered, and next to it a little place which is being fitted-up with stills. This seemed to me a particularly good idea, for it saves fitting-up distilling-apparatus every time it is wanted. Ascending again to the ground-floor, Mr. Wootton ushered me into a charming little room which he calls the "Balance-room." Our illustration gives but a faint idea of its beauty, for it looks right out into the garden through windows overhung with foliage. The walls are covered with a complete set of scheduled plants and numerous beautiful models, showing exactly the structure and individual parts of these plants. In front of the windows are the balances: the large one an English balance exactly the same as that in use at the "Square," the others being different styles of Becker's. Here also is a library of out-of-the-way books for reference. At last we are out into the garden, which on closer examination we find to be a miniature Kew. Here are all the plants which the student wants to know about in actual growth. *Solanum Dulcamara*, *Bryonia dioica*, *Conium maculatum*, and "mony mae." Zinc labels tell the student what is before him, and the plant itself teaches him more in five minutes than half-a-dozen text-books could do in as many weeks.

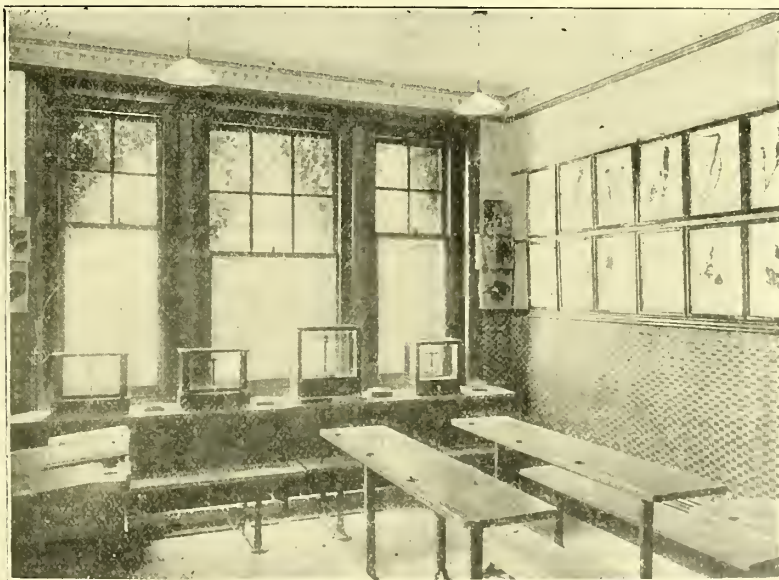
"But how did you do it?" I inquired.

"Easy enough," was the reply. "I got two boxes of plants from Kew and lots of seeds. Come here, and I'll show you fifty or sixty plants of conium, brassica, henbane, the opium-poppy, and lots of others which I have grown from the seeds. You see by this means I can provide a plant for the use of each student."

There is a quarter of an acre of garden altogether. It is an astonishing air-space to be situated in the middle of London. Doubtless this garden will not be the least appreciated part of Mr. Wootton's curriculum, for the student weary of the struggle with an obstreperous pill-mass will find Bentley and a garden-chair in the sun a pleasant relief.

The lecture-room on the first floor is the largest room of all, and will hold sixty-five to seventy students without crowding. The three front windows supply a fine light for

microscopic work. The microscopes are, like the balances, of different kinds, so that the student may acquire a practical knowledge of the various kinds of instruments. The two windows to the back open into a conservatory filled with various plants which grow with difficulty in the open air. The walls are hung around with modern botanical diagrams and all the latest types of physical apparatus. The materia-medica specimens are ranged in bottles on shelving round the room. Every student has a nice



THE BALANCE-ROOM.

desk for note-taking. The demonstrating-platform and bench are fitted with all the latest improvements in apparatus, electric and otherwise. Mr. Wootton opens the school next

week with a good list of students. He is to be assisted by Mr. W. A. Knight, Ph.C., Pereira medallist, who will lecture in materia medica and pharmacy, and demonstrate in pharmacy. The lectures in chemistry, physics, and botany will be given by Mr. Wootton, these being the subjects in which he obtained the B.Sc. The other demonstrators are Mr. Ballet, Ph.C., and Mr. Edwards, M.P.S.

MORE ABOUT MAW'S.

AN overpowering magnetic force always prevents me passing the palatial premises of Messrs. S. Maw, Son & Thompson when I am in Aldersgate Street. Last week I was again drawn, and was fortunate in meeting Mr. J. Thompson at a time when he could spare a few minutes to pilot me over the establishment. The showrooms on the first floor are probably the largest permanent exhibition of druggists' sundries in the world. Here there are collected together samples of each size and pattern of every article which the firm sells. It is the duty of the manager of each department to see that his goods are completely represented in the showroom, and he takes care that samples of any new additions to stock are at once added. London chemists are mostly well represented in the showroom. Visitors and many chemists from the country make a point of looking in when in town, so as to keep *au courant* with all that is doing in the sundries-trade. The showrooms are the training-grounds for travellers, and it seemed to me that as good a training could not be imparted in any other way, nor could a better acquaintance with the goods the firm sells be otherwise obtained. A sight of a monster honeycomb-sponge—which, it seemed to me, would be convenient for mopping up the Thames—led me to ask where the various kinds and sizes of sponges were represented in the showrooms. "Oh, we have a special showroom for sponges; come this way." "This way" led me to a large room on a higher floor, where thousands of pounds' worth of sponges were stored. The cases were piled up in solid stacks, but many of them had the lids removed so as to display the contents the better. If the customer does not see a case to his liking it is but the work of a few minutes to turn up, by reference to the stock-book, other cases of the size, quality, and shapes desired. Cases and half-cases of assorted sponges are also kept ready. The idea of these cases originated some years ago, but it is only of late that the advantages of the system have been increasingly appreciated. To some chemists these cases are invaluable; they save the loss from dust and wear which would result if a big stock of sponges were kept in hand. I was shown the system adopted of taking the sand out of sponges, as well as the other processes which have to be gone through to make sponges ready for toilet use.

SAINSBURY'S IN THE STRAND

used to be the idea. Now the lavender-path of fashion is further west, and it was at 136 Regent Street, W., that I had to seek my next interview. There I found a bevy of beauty—countesses, duchesses, and the like—resting from the labours of shopping, and recuperating the crystal clearness of their voices at the Sainsbury Brazilian onyx soda-fountain. When I reached Mr. Sainsbury I found him in the midst of an array of peculiar-looking perfume and toilet bottles. "These," said he in answer to my inquiry, "are samples of a new line we are taking up in artistic glass and wood products. We have been made the special agents in this country. They are the work of Emile Gallé, of Nancy."

I wanted to get photographs or something to illustrate the bottles, otherwise indescribable in shapes, and a dream of blended colours; but there is nothing of the kind yet, only samples, and my poor words must suffice for the time. Imagine the bottle background, chameleon in tint, and spread over it here and there exquisite flower-work and fern-tracery, and you get some idea of the novelty. A hexagonal perfume-bottle, pyramid-shaped, had on one of its sides a charming little picture of a harvester, exactly like a pen-and-ink sketch with a little added colouring. Another squat-shaped toilet-bottle was amber-coloured, with here and there patches of an opalescent milky ground showing through. The stoppers resembled an opening flower-bud or thistle. "The thistle, you know," explained Mr. Sainsbury, "is the emblem of Lorraine, as well as of Scotland. It is much used

there for artistic work; but, of course, it is different from the Scotch thistle." "But who is Emile Gallé?" I queried, with a curb on the *Nemo me impune lacessit*. "Well, they seem to think a good deal of him in France," was the reply. "He designed and executed the vase which was presented to the Tsar on his last visit to Paris, and I myself saw him finishing a vase, a few weeks ago, which is to be presented to President Loubet." "So his work is rather expensive, eh?" "Well, rather; but then you see there's nothing like it, and a bottle like this will sell itself as a work of art. The perfume or the salts in this case are only secondary considerations." Whereupon I took to admiring the woodwork—pretty examples of inlaying, executed in boxes for sachets, perfume-bottles, and so on.

Continuing my journey towards Bond Street, I could not resist a call at

ATKINSON'S,

where I found Mr. Eugene Barrett in his *sanctum*, pleased with the way that the Atkinson centenary bouquet and toilet articles are going. Further up the street I dropped into Mr. Reuter's, the agent for "4,711" perfumes, to ask if there was anything new about

CAPTOL.

Last February the *C. & D.* gave a hair-lotion recipe with that substance in it, and there appeared to be some disappointment that captol itself was not supplied; but Mr. Reuter is now, by arrangement with the manufacturers, putting a 25-per-cent. solution of pure captol on the market, and has appointed Messrs. S. Maw, Son & Thompson, Aldersgate Street, E.C., retailers' agents for England, and Messrs. Duncan & Flockhart, of Edinburgh, the agents for Scotland, so that pharmacists or medical men can obtain supplies from these firms. The original captol hair-wash is going strong, and several new captol preparations have been added to the list, amongst them being captol pomade and captol-and-sulphur pomade, both of which are put up in pretty ounce opal jars with burnt-in labels and screw metal tops. These retail at 1s. 6d. a bottle.

COUNTER-ATTRACTIONS.

At Messrs. Hearon, Squire & Francis's, 38 Southwark Street, S.E., I inspected a series of counter-specialities which is now very complete. Among them are the Heron biscuits (charcoal and bismuth), which are neatly packed in tins; perfumed bath-salt, a nicely-scented article, in boxes, which should sell well; botanic essence, for making a summer beverage; and limejuice-cordial, in which the delicate flavour of the limes is well retained without the mustiness. In perfumery a nice line is the "Avon violets," packed in pyramid bottles, which are also put, if desired, in silk-lined boxes containing one or two bottles. I saw the proof-sheets of a new catalogue of the firm's, which is to be solely devoted to counter-specialities. The list is to be illustrated with half-tone blocks of the different articles, and will enable customers to get an idea of the neat and attractive manner in which the goods are packed.

AN OPTICAL FACTORY.

I called one day recently at the optical works of Messrs. O. Comitti, Wells, Lyon & Co. (Limited), 67 and 69 Mount Pleasant, Clerkenwell, E.C. The premises are divided into two departments—one devoted to the manufacture of thermometers, barometers, and other meteorological instruments, and the other to spectacles, eyeglasses, and pebble lenses. I spent some time in the first department, then had a good look round the showroom, where a selection of the goods is to be seen. I particularly noticed a charming Louis XIV. barometer, made from an actual specimen of the period mentioned. Turning to the optical portion of the business, I followed the making of pebble spectacles *ab initio*. The rough crystals are imported from Brazil packed in the skins of animals, and are of mixed quality. A preliminary sorting is gone through, so as to eliminate discoloured specimens they are then passed on to the cutter. The cutting is done by means of a revolving plate, the edge being lubricated with a mixture of diamond-dust and oil. Great care, of course, is taken as to the way the crystals are cut in relation to their axes, as if cut otherwise

than at right-angles they are useless for spectacle-lenses. The cut crystals are then cemented on to the grinding-tool by means of pitch, and ground to any desired strength by another tool of corresponding concavity or convexity. The ground lenses are afterwards polished and sorted to detect any defective specimens. I next visited the factory where gold-framed spectacles and eye-glasses are made. It was instructive to see the care taken to collect the filings of gold given off in the different processes. The very dust on the floor is carefully collected, the floor being of zinc, covered with hardwood grids, and from the dust gold is recovered by incineration. I next passed through the stockrooms and the prescription department. In the latter department an enormous number of combinations of cylinder and spherical are kept ready, so as to be able to fill orders without delay. Sometimes, however, an unusual direction of the cylinder-axis or exceptional strength necessitates a special grinding, but this the firm are able to do promptly owing to their grinding-plant always being in working order. An enlargement of the premises which is now being completed will give space for a new showroom on the ground floor, and relieve the congestion from which the various workshops are at present suffering.

AT EARL'S COURT.

It needs a day off to do the Greater Britain exhibition properly and several to recover from it; but I managed in an afternoon, because "Picturesque England" attracted me more than the savages. There I found Messrs Newball & Mason in possession of a prominent corner-stand, the out-



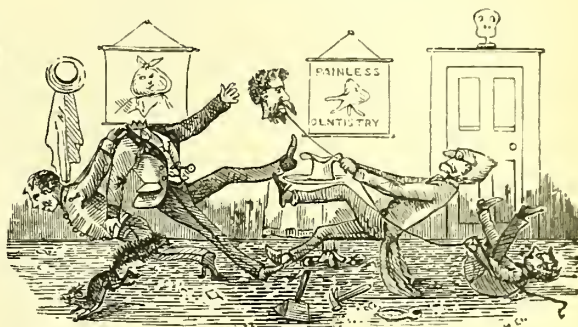
side of which depicted a shop in "Ye ancient borough of Nottingham." Introducing myself to Mr. Collard, who was in charge of the exhibit, I was soon made aware that the herb-beer extract was as popular as ever this hot weather, thanks to its reputation and judicious advertising. In the interior of the shop a brave show of all the firm's well-known temperance-beverages is made. "Is there anything really new," I asked, "with which to quench an absorbing thirst?" "Here is the very thing," said Mr. Collard—"Mason's crystals for lemonade—which is sold by the retailer at 3½d., and it leaves him a good margin of profit." Among other thirst-relievers I noticed a nice health-salt put up in enamelled green canisters, and as it is both cheap and good it ought to attract attention. Another recent novelty is an essence of coffee and chicory in 6d. and 1s. sizes, put up in attractive bottles with nice labels full of medical opinion. N. & M. have always displayed remarkable ingenuity in regard to their advertising matter, of which they give abundant supplies to the retailer, and in this connection they have brought out a series of coloured cardboard puzzles for the little folks, while, with the view of encouraging thrift, they also give away a "Penny Bank," neatly got up in cardboard, on which is printed "Good! It's Mason's." There are few exhibitions of any consequence at which N. & M. have not been represented, as testified by the numerous awards and medals they have received. "The fact of our being at Earl's Court," said Mr Collard, "is not so much to sell our preparations to retail customers as to show the public we are still in the front. It ought to be

emphasised, however, that everything sold here is at full prices." This I had ocular demonstration of several times before I left to inspect the exhibit of

STERN BROTHERS

in the West Australian Section. This firm is one of the largest manufacturers of lubricating-oils and petroleum-jellies in the kingdom. They have four factories, besides many depôts at home and abroad. Their exhibit is a closed glass case containing a full line of their Sternoline preparations in cylindrical and other shaped show bottles and vases, among which I noticed dynamo and machinery oils, Stauffer and automatic lubricators, Fram lubricant for motors, and many others, all of which bear a high-class reputation. Mention should also be made of their paraffinum liquidum and paraffinum molle, B.P., the former being claimed as the most highly refined mineral oil in the market. Surrounding the exhibit are a number of coloured barrels containing "Glandoline," a name applied to a preparation for piston-rods and packings.

A Head with Aching Crown



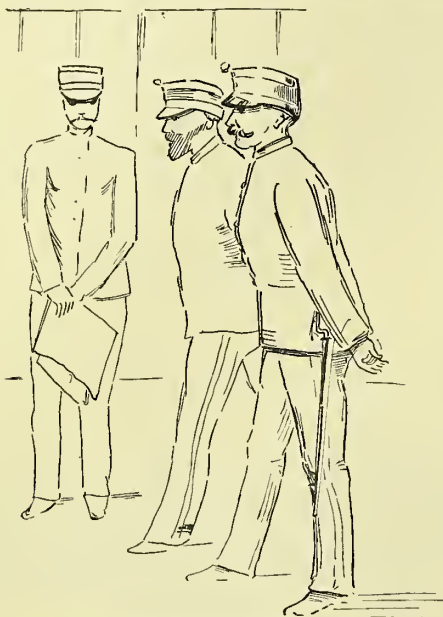
Needs Rest.



CONSULTANT: "Really, madam, all you need is complete rest." Lady Patient: "But, doctor, my tongue—" Consultant: "Your tongue also, madam."—*Hazneiss.*

A Glimpse of Spanish Pharmacy.

THE French train stopped at the frontier station of Irun, but the Spanish local did not leave for half an hour or more — "For the Custom-house examination," explained a



CUSTOM-HOUSE OFFICERS.

"Busily engaged in strolling up and down the platform."

fellow traveller, though the very numerous Customs officials had already been busily engaged in strolling up and down the platform for a considerable time, and were continuing that arduous occupation, for our luggage had been

patent-medicine advertisements (like the poor—always with us) on the back page of the *Imparcial*, and found them wonderfully like the English ones. The signal for departure, "Señores viajeros, al tren!" came at last. The dinginess of my second-class compartment was relieved by the neat uniform of a couple of Civil Guards, the two armed constables who accompany every passenger-train in Spain. Their aspect was decidedly military, but their manners were civil enough, and the foreign "Caballero" (the title "Cavalier" seemed rather flattering to a modest pharmacist like myself, who probably could not remain two minutes astride anything in the form of a horse, unless a wooden one) was invited to share their modest meal of bread and sausage. I declined in my best Castilian, guessing it was a mere form of Spanish courtesy not to eat without first offering to one's neighbour. After passing one or two village stations, and the busy little seaport of Pasajes, we arrived at my destination,



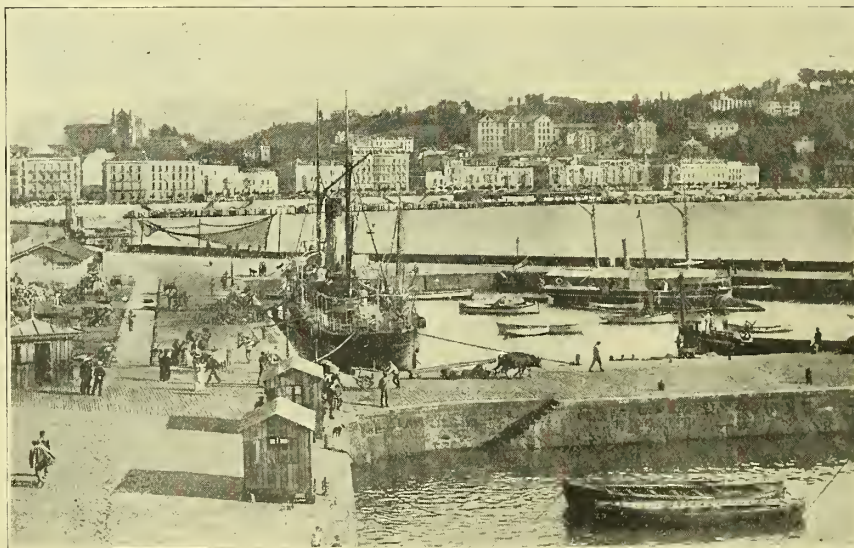
CIVIL GUARDS.

"Decidedly military."

SAN SEBASTIAN,

fifteen miles from the frontier, the capital of the province of Guipuzcoa, the scene of a battle during the Peninsular war, and now the summer seaside residence of the boy king, Alfonso XIII., and his mother, the Queen Regent. The old town and its small harbour—where, by the way, I saw a cargo of Solvay chemicals being disembarked and loaded in bullock-drays—lie at the foot of the citadel stormed by Graham in 1813, and an inscription on a street-corner commemorates the sacking and conflagration of the unfortunate town.

The modern city lies round Concha Bay, with the Casino



THE PORT OF SAN SEBASTIAN.

examined and passed long before. But Spain is a good country in which to learn the virtue of patience, and after changing my French money into silver "duros" and "pesetas" and some bank-notes (I did not see any gold coins in Spain) I settled myself down to decipher the

at one end of the Marine Parade, and the Palacio Real (a modest country-house in red brick and tiles, designed and built for the Queen Regent by a London architect) at the other. The streets are wide and straight, the houses roomy five-storeyed erections with balconies.

THE PHARMACISTS,

"twelve in number, and quite enough for a population of 30,000, don't you think?" as one of them said to me, are mostly to be found in the new part of the town, though there is one in the narrow picturesque High Street, or "Calle Mayor." There are also three or four "droguerías," or drug-stores. These latter sell mineral waters, perfumery and sundries, and some do a little wholesale business in patent medicines. Neither they nor the pharmacists make much window-display or counter-show, but one shop on the Alameda (public promenade) had a very fair selection. It was here and elsewhere that I noted the most

POPULAR SUNDRIES,

among others Vichy, Vals, and Carabaña waters (this latter is, I understand, a Spanish product exploited by French capital), King & Curling's citrate of magnesia, Burroughs, Wellcome & Co.'s beef-and-iron wine, and the "Prince Albert cachous." Scott's emulsion is prominent, and has the distinction of being very closely imitated. I saw one Spanish preparation, got up in very similar packets, which boldly challenged comparison by declaring itself "mucho mejor que Scott" (much better than Scott), in conspicuous capitals, while a third had (rather unpatriotically, I thought) adopted the American eagle. As to the perfumery it was mostly French, as one might have expected — Botot's, Gellé's, Roger & Gallet's, Dr. Pierre's, &c.—but I saw some of Rimmel's, Gosnell's, and the New York "Florida-water," which I was told was very popular in Spain. I noticed Vaissier's "Congo" soap, which is advertised almost as vigorously in France and its vicinity as Pears's is in England.

At M. Vidaur's "ortopedia-farmacia" one whole window was devoted to artificial limbs. By a curious coincidence these are made at Vitoria (the scene of Wellington's great victory). My attention was attracted by the photographs of a number of soldiers in the Spanish colonial uniform (doubtless "rapatriados" from Cuba), each of whom was represented (1) legless or armless, and (2) after being supplied with the artificial limb, doubtless a polite tribute to American marksmanship, for excessive courtesy is one of the remnants of the ancient glory of Spain.

"COLEGIOS FARMACEUTICOS"—A NEW DECREE.

A new decree affecting Spanish pharmacists was issued by Royal authority in April, 1898. By this Act pharmaceutical "Colegios" were established throughout Spain. These "Colleges" are organised (like the syndicates which exist in many departments of France) for prosecuting breaches of the pharmacy law and checking unprofessional conduct. Each of the forty-nine provinces into which Spain is divided is to have a "Colegio" for pharmacists.* For the first year the chairman and office-holders have been nominated by the Governor of the Province, who was

deputed to choose a suitable person for president, and another (the youngest or newest in the profession) as secretary.

At San Sebastian Señor Usabiaga had been nominated Chairman, Señor Goiburu Secretary, and Señor Matilla (who keeps the pharmacy in the Calle Mayor already alluded to) is Treasurer. I was lucky enough to find Mr. Usabiaga in his "farmacia," at the corner of the Plaza de Guipuzcoa, a handsome arcaded square, where the Palacio de la Diputación (or Provincial Government building) is situated, and chatted with him about

THE NEW STATUTES.

He explained that all the pharmacists in the province are associated with the Colegio as soon as they have paid their entrance-fee and satisfied certain formalities. The number of committee, the amount of fee, &c., are regulated according to the "class" of the province. There are three

"classes" of provinces in Spain. As Guipuzcoa (132,000 inhabitants) is a province of the third class, the entrance-fee will in future be 15 pesetas (30 pesetas for second-class provinces, and 50 in first-class). But for this first year only (doubtless to induce all pharmacists to accomplish the formalities without delay) these sums are reduced to 10 pesetas for first-class, 7½ pesetas for second, and 5 pesetas for third-class provinces. Each Colegio is to hold a general meeting at least once a year (in January), and others when needed. But I did not understand that the members of the Colegio had yet been convoked.

The Executive Committee (or Junta de Gobierno) of each College is to be elected by the pharmacists of the province. Only those personally present can vote, and half the Junta is to go out of office at the end of two years, when there will be a new election. Subsequently each representative will be elected for four years.

The number of members in each Junta varies according to the class of province. In the first class provinces like Granada, Barcelona, Malaga, &c., there are, besides the President, five councillors, a secretary, a bookkeeper, and a treasurer. In the second-class provinces (Cordova, Oviedo, Saragossa, &c.) the number of councillors is reduced to three (in third-class to two),

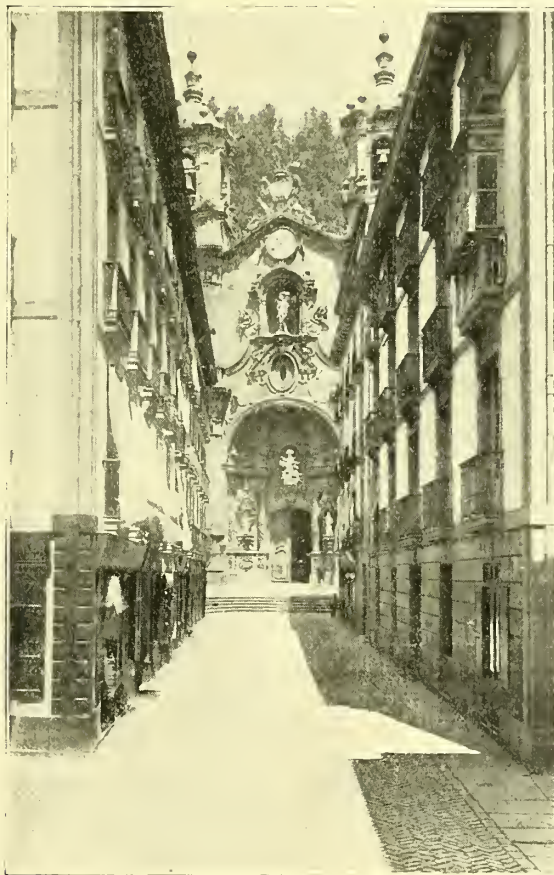
and the functions of bookkeeper and treasurer are fulfilled by the same person.

Certain qualifications as to taxation (rateable value) are required from candidates for election as members of the Junta in the first-class provinces: the president must have been fifteen years in the profession, and the other members ten years. In the smaller provinces these figures are reduced to ten and six years respectively.

At present, all the members of the Junta have been chosen from among pharmacists inhabiting the capital of the province, but M. Usabiaga thinks this unfair to the others, and hinted it would probably be altered later on.

He did not strike me as being over-enthusiastic about the results of the new regulation, but I fancy the younger members of the profession are more sanguine in their views.

The 69 Articles of the Statutes are too verbose even to summarise here, but I may quote the Article 15 as to the duties of the members of a College as follows:—



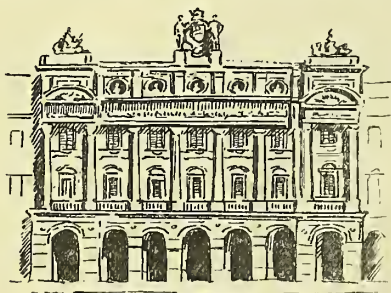
CALLE MAYOR, SAN SEBASTIAN.

* A "Colegio" for medical men is also to be organised for each province. The same decree establishes "Colegios" for the two professions, but they are entirely independent one of the other.

- I. To advise the Junta of the College of their changes of address.
- II. To assist at the yearly general meetings alluded to.
- III. To fill the offices to which they may be elected.
- IV. To pay the various fees.
- V. Not to arrange with certain doctors to supply medicine to their patients, nor to give medical consultations in the pharmacy.
- VI. Not to execute any prescription unless written clearly in Latin or Spanish and signed with the doctor's name, his class, and the number of his diploma (or "patente"). All prescriptions improperly drawn up to be retained by pharmacist and handed to the Sublegado de Farmacia to be acted upon as necessary.
- VII. Not to possess or manage more than one pharmacy.
- VIII. To carry out the resolutions voted by the College.
- IX. And the provisions of these Statutes.
- X. To "exercise the profession with unstained honour, morality, and decorum."

One turns with regret from the sonorous Castilian of this final phrase to search in Article 69 for the penalties for such as fall from their high professional estate. The first offence is to be punished by a simple caution. On the second offence a fine will be inflicted, but only for breaches of (a) Article 12 (*i.e.*, neglect to inform the College of change of address from one province to another); (b) Article 15 just quoted; (c) Article 16, sundry regulations as to the supply of medicaments to societies, &c.; (d) for the illegal practice of pharmacy by unqualified persons. The first fine is not to exceed 50 pesetas (a little under 2*l*.) in third-class provinces, 75 in second-class, and 100 pesetas in first-class. On a repetition of the offence this amount may be trebled, and the next time quitted. In the two latter cases, if the Junta think fit, "suspension" (or temporary revocation of the licence to practise pharmacy) may be ordered for a period not exceeding five months. The pharmacist who has been suspended becomes ineligible for election to the Junta. The Junta is in each case to fully declare the cause of sentence, and the right of appeal (by the accused) to the Home Office in case of fine or suspension is reserved. This would seem to provide ample safeguards against overzeal on the part of the Junta. But excess of energy is not the Spaniard's besetting sin.

Having thus grasped the gist of my little pamphlet, seated in the public garden of the Plaza de Guipuzcoa, I



PALACIO DE LA DIPUTACION.

directed my steps to the rear portion of the Palacio de la Diputacion, where

THE MUNICIPAL LABORATORY

is situated. Here I had hoped to find Dr. Cesar Chicote, who has brought this institution to such a high state of efficiency, and whose new idea of the examination of meat by radiography was noticed in the *C. & D.* some months ago. But I learned with mingled feelings of disappointment and satisfaction that the eminent doctor in pharmacy had recently been nominated director of the Madrid Municipal Laboratory, and had left for the Spanish metropolis some time ago. His place is temporarily occupied by Dr. M. Fernandez Casadevante. This gentleman I found in his pharmacy in the Calle Hernani, and he most courteously offered to show me over the next morning.

The visit was interesting enough, but as the Paris

Municipal Laboratory has been so completely described in the *C. & D.* recently, I need only say that the San Sebastian institution is a worthy follower in its footsteps.

Dr. Casadevante is aided by two more doctors in pharmacy; the bacteriological section is in the hands of Dr. Daniel Echeverria, while Dr. Manuel Vidaur is head of the chemical department. Two of the veterinary "Revisors" or inspectors keep a sharp eye on the abattoirs and the market,



A CORNER OF THE MUNICIPAL LABORATORY.

another works in the laboratory, and a fourth is nominally "libre," or "free," which means he is always very much engaged somewhere or other. A couple of laboratory assistants and a janitor complete the staff. There is, however, also a sanitary and disinfecting service, which occupies an engineer and two brigades of five men apiece. This was the first of the kind installed in Spain, though Madrid has since followed suit. The formaldehyde-vapour disinfectant made by Adnet, of Paris, is used.

In fact, most of the laboratory-apparatus comes from Paris, and a smaller portion from Germany, while Merck's reagents (from Darmstadt) are employed.

CHEMICAL ANALYSES FOR 5*d*.

About 3,000 analyses are made yearly, which seems a large number for a town of 30,000 inhabitants. But when I learnt that a "qualitative" analysis (*i.e.*, mention "good," "bad," or "indifferent") costs 50 centimos, or rather less than 5*d.*, I began to understand. A thorough examination of water costs 15 to 20 pesetas (12*s.* to 16*s.*), and many of the neighbouring towns and villages have their supply periodically examined, while the San Sebastian water is officially reported upon fortnightly.

For 5 pesetas (say 3*s.* 6*d.* to 4*s.*) the purity of tea, saffron, pepper, sugar, or honey is reported on, or the quality of a wet-nurse's milk scientifically expressed.

For butter, vinegar, jam, olive oil, coffee and chicory, the fee is 10 pesetas (say 8*s.*). Ascertaining the degree of alcohol costs 2 pesetas (1*s.* 6*d.*), as does also the examination of the degree of density and inflammability of paraffin. Meat-examination costs 1 peseta. Besides the 3,000 analyses, about 1,700 microscopic examinations are carried out yearly, 3,500 articles of clothing and 100 apartments are disinfected, and 1,500 pieces of meat, &c., examined.

After an inspection of the laboratory, I had an interesting chat with the director and his two assistants—pleasant intelligent young fellows—on

PHARMACEUTICAL EDUCATION IN SPAIN.

As in France, the first step is to take the B.A. or "bachiller" degree. This is usually taken at 17 or so, and then comes the regulation four years' study at one of the faculties of pharmacy at the universities of Madrid, Barcelona, Granada, or Santiago. The two former are the most important. The Granada Faculty does not probably turn out more than half-a-dozen qualified farmacéuticos annually. Santiago has a fair number of pupils, as there is an idea about that the examinations are less rigid there than in the

more important cities. The subjects studied are physics, materia medica, mineralogy, botany, and organic, inorganic, and analytical chemistry; and the final examination, or licenciatura, gives the successful candidate the right to keep open shop throughout Spain.

THE DEGREE OF DOCTOR IN PHARMACY

exists in Spain, but is more ornamental than useful, unless the aim of the student is to fill a professor's chair or hold some Government appointment. To take this degree, another year has to be devoted to biological chemistry and pharmaceutical history and literature; a thesis on some scientific subject must be produced; and last, not least, 1,500 pesetas (say, 60*l.*) paid in fees and in connection with the picturesque ceremony of investiture. The modest workers are usually anxious to avoid these latter items, and my informants confessed to me very frankly that they had obtained dispensation. One of them, by the way, must have been a sort of "infant prodigy," for he took his bachiller degree at 14, and passed as doctor at 20. The other was only just over 23—in fact, their extreme youthfulness was what struck me most next to the mar-



A GROUP OF STUDENTS IN WINTER-TIME

(The Capa or Spanish cloak).

vellous way in which they grasped my bad French and worse Spanish. But it was 1 o'clock, the Spanish lunch hour, and I said "adios," with some regret to my amiable and intelligent companions. There were several things I should have liked to ask them, such as the system of municipal subvention by which pharmacists are enabled to live in rural Spain, the question of foreign patents, the "existence of the cutting evil, &c., but my hours in the Peninsula were numbered; so I had to content myself with obtaining a copy of Mallaina and Chiarlone's "Historia Critico Literaria de la Farmacia," and during the long journey from Hendaye (the French frontier) to Calais, I had time to dip into

THE HISTORY OF SPANISH PHARMACY

—one of the most interesting, I suppose, on the continent of Europe; for were not the Moorish conquerors of Spain the representatives of those turbaned Orientals who first separated pharmacy from medicine, and one of whom worthily figures on the British Pharmaceutical Society's certificate?

In the eleventh century the Arab schools of Cordova, Seville, Murcia, Saragossa, and Toledo were hardly less famous than the University of Salerno itself. Cordova was the most important; among its students it numbered Gerbert of Aurillac, who afterwards became Pope Sylvester II. (999 to 1003), the Englishmen, Abelard and Daniel Mosley, &c., while Gheber, who was considered the chief of pharmacists among the Mahomedans of the Middle Ages, is supposed to have been born at Seville.

Among the earliest recorded works on pharmacy may be mentioned the "Manuductio ad Artem Medicinæ," of Ebn Vaphedi (who studied at Toledo), in which the preparation of syrups, pills, lozenges, electuaries, plasters, &c., is described; and the "Al Fakrif," or "Method of Medicine," of the Cordovan *savant* Alzaragio, which dates from the twelfth century, and was translated into Latin, the vulgar tongue of the Middle Age student.

When the Christians reconquered Spain, and the famous Catholic university of Salamanca was founded, the original "colegios," or apothecaries' guilds, appeared in Madrid, Barcelona, Valencia, Saragossa, Pamplona, Seville, and Tarragona. The Barcelona College, one of the most important, existed in the thirteenth century, and not only visited the "boticas," like modern food and drug inspectors, but prescribed the conditions of apprenticeship and examination. As in England and France, the apothecaries' corporations in

those days were linked with the grocers. King Alfonso III. decreed that no apothecary or grocer should send in his bill more than a year after drugs were supplied, and that every prescription should be signed by a doctor and bear the patient's name.

DRACONIC POISONS ACT.

Alorzo X. of Aragon decreed, some 600 years ago, that any apothecary who gave "scammony or strong medicine" without a doctor's prescription should, in case of the patient's death, be punished for homicide, and "die dishonourably"—i.e., "be thrown to lions or dogs, &c., to be killed" In 1493—the year after the Moors were driven out of Granada—apothecaries were freed from various Customs and other duties on medicines, "unless the contrary were specified on the Excise-sheets."

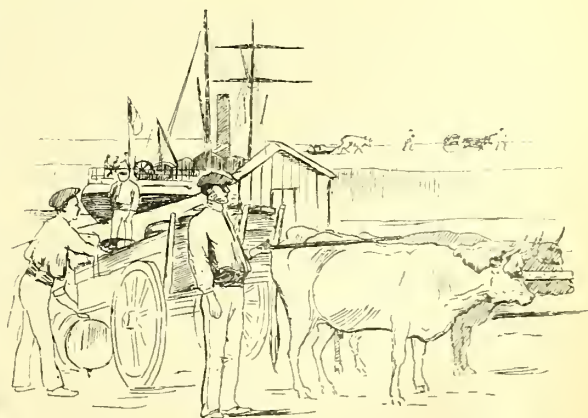
In spite of the Christianisation of Spain at the sword's point, many of the Moors and Jews were too skilful in the medical art to be mercilessly slaughtered. They usually, however, found it convenient to outwardly conform to Catholicism, like Otzar Anii, who became "Master Julian," and dedicated his book, "The Treasure of the Poor" (recipes for medicines, tooth-powders, &c.), to the most orthodox Christian Saints.

As readers of Motley's historical works will be aware, Philip II., husband of Queen Mary of England, was a great man for details, and the pharmaceutical decrees of his reign are numerous. He signed regulations to the effect that no apothecary should be admitted to the corporation unless he knew Latin, had served four years' apprenticeship, and was 25 years old. Four golden crowns were to be paid in by every candidate for examination, and returned when he had passed. Every pot of compounded drugs was to bear the apothecary's signature, with the day, month, and year of fabrication. The fine for omission of this detail (16,000 maravedis) was to be equally divided between the informer, the prosecuting court, and the judge who gave the sentence.

Many such details are to be found in this history, although a rather large portion of the work is devoted to the general history of scientific literature, both in Spain and abroad. I will conclude my notice of it by quoting a prescription for a sparadrop made in the Royal Pharmacy (*Botica Real*) of San Juan de Burgos in 1632. The Latin wording and the Roman notation, onces, &c., will render it more legible than many modern foreign prescriptions:—

Diachilonis minoris lbj et semisen
Emp. geminis unc viij
Resinæ
Cerae albae
Sepi hirci aña unc. iij
Olea amigd. dul
Olei ros. aña unc. i misce,

ex arte fiat liquatio in quo ad huc liquatum, et qualidum immergatus tela parum attrita.



SOLVAY'S CHEMICALS ARE CARRIED IN BULLOCK-CARTS AT SAN SEBASTIAN.

Cinchona-wine.

On the Continent cinchona-wine is a favourite tonic-medicine, and has many points of superiority over quinine-wine, but it is a troublesome preparation to make. The subjoined presents in abstract some recent observations by Mr. Apotheker Georg Weindel, published in the *Pharmaceutische Zeitung*, and gives excellent galenical hints, besides good recipes.

A LARGE number of formulæ for cinchona-wine have been devised so as to produce a clear and permanent wine without loss of cinchotannic acid and alkaloids. The Ph. Germ. I. ordered the wine to be made by macerating 50 grammes of cinchona-bark for a week in 1,000 grammes of red wine, when the macerate was pressed and filtered. Wine prepared in this way constantly settles and thickens. It takes years to become completely clear, then it is found to be colourless also.

The second edition of the Ph. Germ. changed the formula for one prescribing a mixture of tincture of cinchona and glycerin of each 100 grammes, and sherry 300 grammes; but this also continued to precipitate for six months, and the author has found the alkaloidal content to diminish from 1.82 per cent. when fresh to 1.36 per cent. at the end of four weeks, and to 0.486 per cent. at the end of twenty weeks, owing to precipitation. The German Pharmacopœia authorities were evidently aware of the objections to the official wine, for in the last edition they struck out the formula; but the demand for it remains, and various are the expedients which have been proposed for making a stable preparation.

Kreml is of opinion that the muddiness of the wine is due to decomposition of the cinchona red, and he has proposed to avoid this by mixing 500 grammes of coarsely-powdered cinchona and 50 grammes of slaked lime with 350 grammes of rectified spirit and 150 grammes of water. After three days 10 litres of wine is added, maceration continued for a week, the liquid then filtered, and to each 1,000 grammes of filtrate 8 grammes of tartaric acid is added. The author has made cinchona-wine by this method and finds that it has a full cinchona taste, and the flavour of the wine is retained whether made with sherry, Malaga, Ungar, or Samos. It is only when this wine has stood for a long time, or when the temperature is very variable—as in spring or autumn—that a chocolate-coloured sediment is produced. The author has also observed that the wine has the taste of lime, and finds that this is owing to the wine used not being alcoholic enough; he therefore adds about 70 grammes of rectified spirit to each litre of wine, and this overcomes the objection.

The author finds that when freshly prepared the wine, according to Kreml's formula, yields 2.76 per cent. of alkaloids. This is satisfactory; but the method of making is somewhat tedious and complicated, therefore he suggests the following formula:—

Cinchona in coarse powder...	500 grammes
Slaked lime	60 grammes
Water	150 grammes

Mix, and allow to stand for about an hour; then add—
Ether 1,000 grammes

Macerate for twelve hours, shaking occasionally; filter the ether, and wash the marc with a little spirit. Then macerate it in the following menstruum:—

Spirit	70 grammes
Water	300 grammes

Three days later add—

Wine	9,000 grammes
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Macerate for a fortnight, shaking occasionally. Meanwhile the ether is distilled from the first macerate, and the extract obtained is dissolved in the filtrate from the second maceration, and 275 grammes of citric acid is added, and the wine put aside for a time, and again filtered. If it is desired to have a sweet wine, 10 grammes citric acid and 1,500 to 2,500 grammes of golden syrup are added.

The product in both cases is faultless as regards taste. Samos, Ungar, Malaga, and port wines are specially suitable for making it, but the author prefers a mixture of Malaga 2 parts and sherry 3 parts. Only wines of high alcoholic strength should be used. The wine contains from 2.3 to 3 per cent. of alkaloids, according to the bark used.

The author then refers to Laroche's formula, which gives a poor product, and adds the following recipe, which he obtained from the late Apotheker Piolet, who got it in Lyons. It is greatly used in France:—

Coarsely powdered cinchona ...	500 grammes
Pure hydrochloric acid	30 grammes
Glycerin	250 grammes
Diluted alcohol	500 grammes

Put into a covered enamelled basin, and digest twenty-four hours on a steam-bath; then add—

Sherry	10 litres
Molasses	500 grammes
Alcohol	250 grammes

Macerate for five weeks, with occasional shaking. Then press and filter.

Wine prepared in this way tastes strongly of cinchona, but has this drawback—that it cannot be retained by many people, particularly women and children. Doctors have told the author that this is caused by the glycerin in it.

The following formula is an improved modification of one which was published in the *Pharmaceutische Zeitung*:—

Fluid extract of cinchona	75 grammes
Citric acid	2 grammes
Molasses	100 grammes
Cognac	40 grammes
Rectified spirit	100 grammes
Malaga	700 grammes

This is left to settle for some time, and filtered.

The active ingredients of the bark are retained in this wine, and it has a pleasant taste of cinchona. If one takes the trouble to compare these formulæ with one another, one comes to the conclusion that a common principle lies at the root of them. Citric acid and tartaric acid are used in some cases, and hydrochloric acid in others, to prevent loss of alkaloids. After many trials the author worked out the following recipes:—

Cinchona in coarse powder	500 grammes
Pure hydrochloric acid	30 grammes
Water	750 grammes

Digest for twenty-four hours in a covered vessel on a steam-bath; then put into a wide-mouthed bottle with 1,000 grammes of spirit. Set aside for a week, then add—

Sherry	10,000 grammes
Molasses	1,500 grammes
Orange syrup... ..	200 grammes
Citric acid	10 grammes

Macerate four weeks, press, and filter.

A very good wine is obtained if, instead of sherry 10,000 grammes, equal parts of sherry and Malaga are used. An excellent wine is also obtained by percolation in the following manner:—

500 grammes of coarsely-powdered cinchona is treated on a steam-bath, as in the last recipe, with a mixture of—

Hydrochloric acid	30 grammes
Water	600 grammes
Rectified spirit	400 grammes

The mass is then pressed into a percolator, and 500 grammes of rectified spirit added. Macerate for about six days, then percolate slowly with 5,000 grammes sherry, to which a solution of 15 grammes of citric acid has been added. Continue percolation with a mixture of Malaga 5,000 grammes, molasses 1,500 grammes, tincture of orange 50 grammes, and cognac 500 grammes. Leave for fourteen days to settle, then filter.

Cinchona-wine prepared according to these two prescriptions is as clear as gold, and will retain this quality if it is carefully kept—i.e., protected from the light in a brown bottle. Cinchona-wine should be kept in a cool cellar for about three weeks before final filtration. For the last few years the author has only used these two last recipes, and has always obtained faultless preparations. He specially recommends the last recipe, with sherry and Malaga equal parts. The wine is then of a dark reddish-brown colour and of faultless taste, and is specially favoured by doctors and patients.

Cinchona-and-Iron Wine.

Cinchona-wine	5,000 grammes
Spirit	200 grammes
Molasses	700 grammes
Dialysed iron	100 grammes

Mix carefully and set aside for ten days in a cool cellar, and filter.

Another recipe is :—

Cinchona-wine	...	...	5,000	grammes
Orange syrup	...	...	400	grammes
Molasses	...	...	600	grammes
Quinine hydrochloride	...	...	2.5	grammes
Tincture of perchloride of iron	...	...	300	grammes

Prepare as the foregoing.

Both recipes produce faultless preparations. They settle and filter easily. The first wine is mild and pleasant, the second is of somewhat strong flavour owing to the addition of quinine.

Early in the Century.

SOME time ago it was my lot to act as *locum-tenens* for a chemist whose old-established shop is situated in one of the main roads of South London. At the beginning of the century the locality was a well-to-do, or, as no doubt it was then called, a genteel, neighbourhood, the resort of wealthy merchants who had begun to forsake their city residences, and preferred rose-blooms to Bloomsbury Square. But its erstwhile glories have to a great extent departed, and the wily coster has made the surrounding streets his own particular province.

Turning about in search of the poison-book (always shoved away in an odd corner by the man whom a benevolent and perspicuous Legislature imagines to be gaining a livelihood by the perpetual retail of toxics), I came across a curious little MS. formula-book, which was interesting to me as showing something of the life of the old apothecary who, over ninety years ago, stood behind this very counter, and, perhaps, in summer-time saw the setting sun gild the leaves of the ancient mulberry-tree in the back garden, the peculiar pride of his modern successor.

My employer gave me permission to make what use I pleased of the old volume, but I am bound to say I cannot find anything in it which will enable me to compete with "Pharmaceutical Formulas." It has, however, an interest of its own. It is an oblong volume about 9 inches long by 5 inches wide, and spreads out lengthways. The dog's-eared leaves are old and dirty, but still the yellow paper retains the crispness of pre-esparto days, and the vivid blackness of the ink does credit to its formula therein recorded.

It gives abundant evidence of having been highly prized, but most of its recipes have been relegated to obscurity, while others foreshadow the days to come.

As the book is dated 1809, "when George the Third was king," and snuff-taking was universal, it is not surprising to find recipes for "French carrot snuff," composed of rapee flavoured with rhodium, ambergris, and that indispensable ingredient of all snuffs "oxangill." "Maccabarr" and "Strassburg" were no doubt favourites of the white-chokered bucks of 1809, and "cephalic snuff" is still not unknown on chemists' counters, though I doubt whether it is now, as then, composed of brown Scotch, salts of tartar, and sal ammon. vol.

Our friend made his own "segars," and elaborate directions, with delightfully quaint little practical side-notes, are given for the flavouring and making of the fragrant weeds.

"A Substitute for Yest" consists of muriatic acid, carbonate of soda, and "flower," betraying the same dissatisfaction with "yest" which has led to baking-powder, self-raising flour, and Dr. Dauglish's system and the A.B.C. shops.

"Milk of roses" was then in the full pride of its fame; now, alas! discarded for something newer, but not more poetically named. The formula for aromatic vinegar is followed by the curt condemnation, "The above is useless."

I was surprised to find that seidlitz-powders had been so long in vogue; the formula is exactly the same as that which apprentice-hip printed indelibly on my mind.

Nor did the old gentleman disdain more commercial, if less strictly pharmaceutical, trading; for formulas for "preserving butter," "blacking," &c., alternate good-naturedly with pills, ointments, and plasters.

"Steel pills" are made of ferri sulph., pot. subcarb., and rhubarb, and were then called "Dr. Law's recipe for

chlorosis." It arouses an awful suspicion that Dr. Bland and Dr. Williams have ill-deserved the laurels that shade their brows.

"A tincture for teeth and gums" is a puzzle:—

Take of—

2 drams coccus
Acid. sulph. 9 lbs.
Tr. lavand. co. m.vj.

M. Ft. tincture.

I wonder if the apprentice ever made it up with that literal exactitude which distinguishes the genus. Solution was a wide term, for "to make wax soluble in water" is emulsification with potash. "To make new brandy taste like old" you must put 6 drops of volatile alkali in each bottle, colour with burnt honey, and add a little eau de Cologne! I wonder how that affects the morning after.

Delcroix lavender-water is a hardy perennial, then as now the druggist's pride. Lemon kali must have been popular with the South London cherubs of the day, for the form is written in pounds.

Marking-ink is to-day made from the old recipe; and a flagrant and unblushing title—"an excellent imitation of Steers' opodeldoc"—reminds us that "substitution" is not altogether the daughter of competition.

An ordinary antibilious pill is labelled a "cure for sea-sickness," and no doubt with as good results as modern remedies.

"Durable ink" deserves the adjective if these old and discoloured pages were written with it, for it could not have been of more velvety density in 1809 than it is to-day.

Ext. coloc. co., pil. aloes et myrrh., and a hundred other names are so familiar as to seem almost out of place in this ancient formularly, and remind us of the debt we owe to our forefathers, in spite of our pride in the progress of pharmacy.

"A Perpetual Lamp" is phosphoretted oil, and "it may be rubbed on the skin without injury"; and no doubt the errand boy did so, and frightened the maidservant out of her wits in the coal-cellar.

We are reminded of the modernity of matches by the recipe for "Instantaneous Light":—

R. Oxymuriate of potash and loaf-sugar dissolved over the fire gradually, and a little vermillion. Fill the bottle oil of vitriol.

R. Phosphorus and quicklime, equal parts.

Let the Minor student compound that *secundum artem*.

Tr. lavand. co. was made with proof spirit, tr. roborans has long ago been consigned to the limbo of the forgotten, and one is never now asked for atramentum.

Theriacandrom consists of twenty-three articles—a stranded relic of the polypharmacy of the previous century. What use was there for tr. nicotian.? Warner's tincture of opium was compounded of opium, salts of tartar, nutmegs, and Castile soap.

Directions are given to put up 1 dr. of sal acetosella in small boxes, labelled "Salts of lemon," and charge 1s. each. *Mais les stores ont changé tout cela.*

In spite of our boasted progress there is much that is abiding and familiar in this revelation of a quaint past, a record with which we can feel a professional and human sympathy.

An old man who came in the shop informed me that, as a boy, he perfectly remembered the old apothecary in 1840; and it is a pleasure to know that he was very well off, of genial disposition, and of great local reputation. He died in harness at a good old age. PENN'ORTH.

THE infant mortality in Hungary is 25 per cent. of the children born.

FROM BOSTON.—Mamma: "Yes, Emerson, I am aware that the medicine is very disagreeable, but if you will take it like a little man I will let you read Ibsen afterward."

A "PRINTER'S ERROR" is confessed to by a *Grocer* contributor. Writing about a gentleman who recently died, he said he "was a sober and a thorough Lancashire man." It should have read, "was a solicitor and a thorough Lancashire man."

Soap-making in India.

WE feel strongly tempted to make Lord Beaconsfield's famous dictum regarding chemicals the starting-point of this article. It would look so appropriate to connect him so neatly with the East, for what we have to say is about a soap-factory which started in India about twenty years ago,



MR. ALFRED E. SHORTER.

E. Shorter, in London enabled us to have a brief chat with him about the venture.

It appears that it commenced in 1881 at Meerut, on the North-West frontier, in the factory here pictured, which is still in existence, and gives employment to some eighty or ninety hands. A number of native gentlemen, in association with a few Europeans, thought that the resources of the country in respect to unlimited supplies of fat materials, as well as some alkali, could be utilised, and caste prejudices against the use of that unknown compound, European soap, in some way disarmed by the production of soap in the country from vegetable fats. The company was accordingly formed, and as at Meerut they were practically in touch with the border garrisons, the supply of household and toilet soaps to the soldiers gave them a foothold until they got hold of the native population. The Meerut factory remains an important part of the company's business; but about seven years ago they acquired in Garden Reach, Calcutta, ground on which they established a second factory, which has grown year by year, until now some 500 hands are employed in it, and it is as well equipped as any English soap-factory. There also candles are manufactured. It is notable in regard to the venture, firstly, that the company aim especially to provide the natives with soap, therefore they have to know well what the natives want, and what their caste prejudices prevent them handling; secondly, with the exception of the skilled European supervision, aided by well-trained native chemists, the whole of the work is done by natives, who in a sense are the little leaven which may ultimately leaven the whole lot; and, thirdly, practically the bulk of the crude materials employed is Indian produce. Mr. Shorter tells us that all the resin which India produces, chiefly in the North-West Province, is purchased by his company; they have rich supplies of vegetable oils to draw from, and have made arrangements for getting fresh cocoa-nut oil, while a beef-eating population

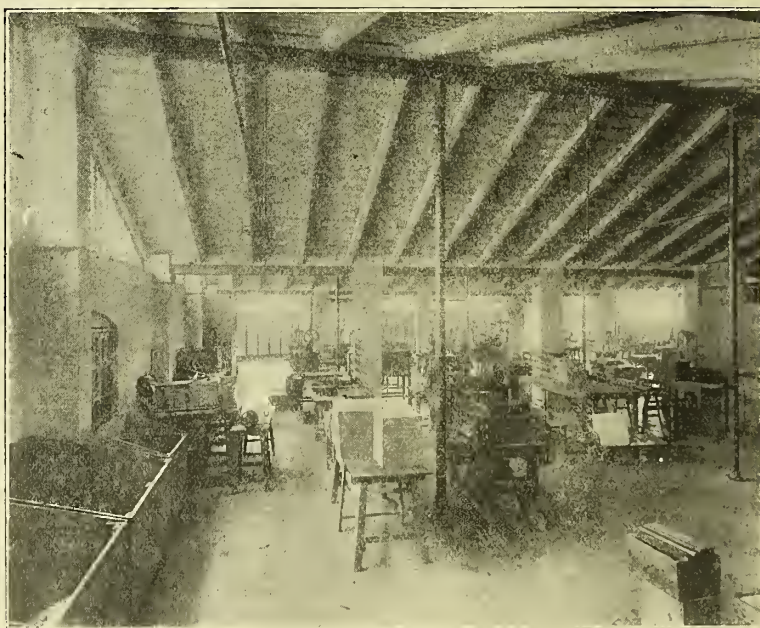
and has been slowly but steadily growing all the time, pushing the sale of its soaps quietly amongst the natives, thus trying to break down habits whose age has to be reckoned by centuries, and to make that blessing of civilisation—good soap—a daily necessity to our dusky compatriots. The North-West Soap Company (Limited) are the owners of the factory, and the presence of the managing director, Mr. Alfred

in the north provides them with stores of tallow at a comparatively cheap rate, and one of the principal parts of the Meerut work is to refine this tallow before it is sent to Calcutta. Of alkali they get abundance in the country, so that they are only dependent on Europe for such things as the materials for box-making, perfumes which they buy from a well-known London firm, and a few other of the luxuries of soap-making. With two good interior views to show the equipment of the



THE CALCUTTA FACTORY.

Calcutta factory (these are a selection from half-a-dozen different views, all showing equally up-to-date equipment), it is unnecessary to go into detail about the work of the factory; in all particulars soap-making in India is precisely what it is at home, and the aim of the company is to produce soap exactly like English in composition, finish, and style. During the past few years the company have laid down the newest milling-machinery, and from samples which Mr. Shorter has submitted to us we judge that the soap produced



INTERIOR OF THE CALCUTTA FACTORY.
Machinery for Cutting and Stamping Toilet-soaps.

is as uniform in respect to colour and density as can be desired, while the percentage of moisture is exceptionally low. What astonishes us about the soaps is their really beautiful finish and the attractive manner in which they are

put up. For example, there is a heliotrope soap—an oval cake of the “herbal tablet” style—carefully wrapped in paraffin paper, with a green-and-gold outer wrapper and floral band-label, put up in boxes of three tablets, with an artistic Cupid label. Even more elegant is the “Muschio,” a rich brown soap of wax-like texture, and medicated soaps, such as carbolic, are produced in strict regard to accuracy of medication.

While the business of the company within the borders



THE MEERUT FACTORY.

of India is considerable, they are gradually extending their influence to all the Eastern countries with which India trades, and in Thibet, Persia, China, Japan, and the Straits Settlements they have already established a good connection. They purpose sending travellers to Australia, and it is apparent that they are splendidly situated for competing with the cheap German soaps, for the cheapness of labour in India and their favourable situation in regard to materials enable them to beat the Germans in price, and to

the millions of the poorer classes use dhobbie's earth, and even though many of them have learnt to know N.W.S.Co. soap they use it in the most sparing manner. They keep the cake when they get it in a piece of cloth, and solemnly unwind it when the washing is to begin; then they take a rub of it on the hands, and rewrap the soap before they proceed to make the single rub do for, perhaps, the whole body. Even this, however, is significant of much, and it is likely that in a generation or two these races, which have got along for centuries without soap, will find it as necessary to their existence as we do.

At the Counter.

“A BOTTLE OF ELEPHANTS PRESPERATION” was what Mr. Holt, of Birkenhead, has to provide.

“A BOX OF KETTENS PUDDER,” and “a box of red saw for the hair or mothers treasure.” A Banffshire chemist sends us this order.

AN ANTIGALACTOGOGUE.—Mr. J. Brooks, chemist and druggist, East Ham, was recently asked for “2*l*. Diagram plaster, to dry up tittie.”

IN a lot from Peterhead we find:—Sulphur knell tablos; pasques made of Norwedian tar (Geraudel's); caine pods emery clough; borough cassett; peckile dust (petal dust);

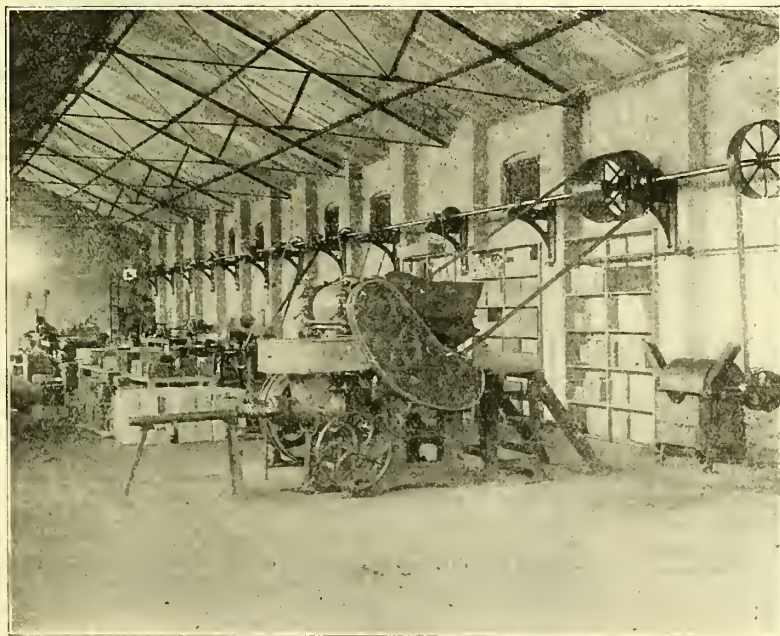
FIRES BALSAM, carvinet of iern, vinegret (for foenugreek), washer chips, and insiped oilment are selected from a variety of specimens sent by Mr. H. Santley Jones, of New Swindon.

MR J. GRIFFITHS RICHARDS, Hastings, writes: “I have just had the following telegram:—‘Send by next train two tins tomatoes,’ and have filled the order by forwarding two tins ‘Somatose.’”

A METHODICAL CHEMIST sends us from the South of England a bulky scrap-book into which he has pasted all the curious orders he has received for a considerable time past. The collection illustrates the marvellous ingenuity of inaccurate spellers. We pass over the variations on ipecacuanha, precipitate powder, and hiera picra, for these have become wearisome. We only quote those which strike us as in some respects novel.

“Ox oil for cleaning brass” seems easy, but a note informs us that the customer refused oxalic acid. “Nox allid acid” is not queried. “Bitter alias” is more happily expressed than “Bitter Alice.” “Grudge's heal all” suggests that Mr Dredge might with advantage advertise his name a little more freely. “Oh raund,” “Merry goes,” “Henseed,” “Cwacha chips,” “Senior leaves,” “Camel-oil flowers,” “Catique,” are interesting botanical perversions. Pharmacy is treated even worse in “Diagonal plaster,” “Cholic eather,” “Sufferine for to make the clothes cream colour,” “Confirmation pills” (pil. rhei co.), “Limidilectia,” “Chemist's blood, two penny worth,” “Para garlic,” “two oz of Epsom sauce,” “Tincture of lubagoack um,” “Oxided ink,” “A monea,” “Globular salts,” “Borwicks,” “Loginhan,” “1*l*. chloride of lime; do you think that is better than diabolical powder?” “A penneth of Mr. Granules pills for my liver,” “A halfoenny worm-cake for a child 25 years (!) of age suffering from an irritation of her nasal organ.” Small child who frequently bought pennyworths of pil. cochiae explained that her mother used it to black straw hats!

FROM BAYSWATER!—Messrs. Albert Smith & Co., Bayswater, W., were requested to supply “1*l*. f Precilikin for ealing a wound.” A sound School Board education is evidently needed in the West-end.



INTERIOR OF THE CALCUTTA FACTORY.

In the foreground is one of the largest soap-milling machines in the world, and at the rear is box-making machinery for making cardboard, wood, and tin boxes.

give the purchaser an article equal to English in value. In India alone there is an immense field practically untapped. Only the richer and better-educated know the value of soap;

Advertising Ideas.

CANTERBURY VIOLETS.

Messrs. Walker & Harris, chemists and druggists, Ashford, Canterbury, Ramsgate, and London, have had a competition lately. They put advertisements in the local papers in which one word contained an error of one letter. To the person finding this out whose letter indicating the mistake was opened first each Monday a free bottle of the firm's Canterbury violet-perfume was sent.

AN ALMANAC FOR EXCHANGE.

Mr. James Keeble, agricultural and veterinary chemist, Crewkerne, publishes an almanac with which he combines a "cash-price-usual-price" list of popular drugs and medicines. The reading-matter and illustrations are good, and other chemists may find ideas in it which they would like to adopt. Mr. Keeble tells us he will send a copy to any chemist who sends a copy of his own almanac or price-list to him first.

THE NEW CENTURY.

Messrs. Boots (Limited) have recently published the "New Century Calendar," dating from June, 1899, to June, 1900. It has large views of Nottingham Castle, Haddon Hall, and similar historic buildings on each page; but why "new century"? We reckon that the twentieth century does not begin until January 1, 1901. The era began with the year 1, and the first century finished at midnight on December 31, 100. It is true that the Prince of Wales has said that this year ends the nineteenth century, but the Astronomer-Royal is opposed to that view, and old Father Time also objects to it.

A CHINESE ADVERTISEMENT.

A Shanghai native firm issue tissue-paper handbills, 10 inches by 8 inches, from one of which we have had the subjoined reduction made:—

"RISING SUN" LEMONADE.

The undersigned begs to inform the public of Shanghai that We have now opened a factory and store at No. P. 504, North Honan Road to make and for the Sale of "Rising Sun" Lemonade. Our factory is under the Management of U. Kitamura Esq., Who has had more than Twenty Years' Experience in Japan in the Manufacture of aerated Waters, and as a supplier to the Japanese Army and Navy, he holds the highest testimonials and feels sure that the excellence of his make, will soon gain us here a fair share of the public's patronage and support. Being Manufactured in newly patented machine from Taebie distilled Water the lemonade may be said to be the best of its Kind to be had here. A trial is earnestly solicited and all orders will be promptly and carefully executed.

TUNG SHENG & Co.

本號向在東洋製造
汽水已有二十餘
年專售大日本陸
軍部所用今運到
等機器精製汽水
香味適口兼可驅
暑涼氣美觀上
批發物價廉
商賈願者請到上
海馬路北河南路
程里認明第五百
四號門牌庶不致
誤以及各埠洋行
可代拆代批如要
請到本號面議
製造人北村卯之
松
大日本陸軍御用
鐵馬路北村卯之
松
商日東鐵號謹啓

"How I RAN MY MAGAZINE."

Mr. Rex Blanchford, chemist, Richmond, S.W., writes:—

Some eighteen months since I decided to start an illustrated magazine, and forwarded an advance copy to the Editor of the C. & D., who was good enough to favourably comment on it. Judging from the number of inquiries I received from my *confrères* as to cost, results, &c., it occurred to me that a brief outline of the *modus operandi* would not be devoid of interest to a wider circle than the private inquirers. From the point of view of advertising a magazine must be considered a purely local medium; it is therefore essential to produce a magazine on lines adapted to the requirements of the locality in which it will be circulated.

My first idea was to sell the magazine at 1d. per copy, advertising that the entire proceeds were to be devoted to the local hospital funds. Having thus the support of a charity in view, I anticipated a large demand. My expectations were not, however, fulfilled, since out of a monthly issue of 1,000 copies only 100 were

sold. In disgust at the uncharitableness of the B.P. for not catching on to my fine philanthropic advertising-scheme, I decided on a house-to-house gratis distribution. Here I "struck ile," and in a very short time found the magazine paying handsomely. Advertisements on a fairly remunerative scale flowed in, so that, although the cost of production was quite 10l. per month, I found the payment for advertisements covered this, and I was getting a big local advertisement for nothing, unless one counts the effort of writing, correcting proofs, &c.



It will be seen from the accompanying illustration of the magazine-cover that there was not too much of the proprietary ad. in its production, the principal position being occupied (for a consideration) by another tradesman. The printer's name and address, in the clearest-cut run-and-readable type, may also be noted. Each edition had a complete set of new illustrations. I adopted the delicate, but costly, half-tone process originated by Meisenbach in 1832. There are many firms who produce this work at prices varying from 5d. to 9d. per square inch. Half-tone prints entail the use of calendered paper. It is an improvement to have a duo-tint cover—i.e., the so-called "ideal" paper.

With regard to the literary side of the magazine, each number contained a complete story, written by a professional, who was asked to give local colour by working in the places of interest in the district. A special feature was made of the "Photographic Column," and articles on developing, &c. Chemists who deal in photographic goods should certainly note this, inserting answers to correspondents over difficulties which have arisen, and, in order to make the column of general interest, printing the question as well as the answer. A "Sale and Exchange Column," "Sports," "Weddings," &c., all come in, with the result, at the time of writing, that the magazine is regarded by the tradesmen as a good advertising-medium, and its financial success is assured.

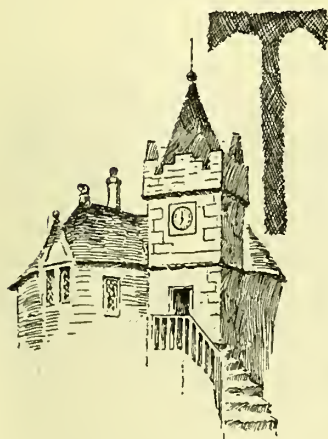
Should any chemist think of making a venture in this direction, I shall be glad to afford any information regarding details which I may have omitted. I may add that the accumulation of half-tone blocks could be utilised in the production of an illustrated local guide, or lent on hire to other advertisers.

If Mr. Blanchford's suggestion is taken up by other chemists, there certainly should be a means of exchanging half-tone engravings. We are always willing to lend any which we may to subscribers who will pay carriage both ways and acknowledge the source. For general exchange there can be no better medium of announcement than our Exchange Column, and we shall try to arrange with the publisher for a "Half-tone Engravings" headline, so that advertisers need only name the subjects and their names and addresses.

THE HORSE is man's best friend; it and the cow, the sheep, the dog, and other domestic animals are written about in "Veterinary Counter-practice," a book published at 42 Cannon Street, E.C., price 3s 6d; by post 3s 9d. More than ten thousand chemists use the book.

A Pharmacy in Thrums.

"The lock-up was crammed with prisoners, and the Riot Act had been read from the town-house stairs."



THURMS was daft when that happened. Babbie stood at the stair-head beside Gavin, and the town was in an uproar. If that is not strictly accurate Barrie-worshippers can make it good. Mr. W. Hole, R.S.A., has etched a stirring picture of the midnight encounter a bit of which is worked into the initial letter. Although the outside stair is gone from the town-house the house itself remains, and it is a pharmacy. Hence this lapse into the Scotch kailyard.

Thrums, or Kirriemuir, has always enjoyed the reputation of being out of the way; it is not on the road to anywhere, and it did not wake up to the importance of the steam-loom when it arrived. But it is different now. For example, in the matter of pharmaceutical progress we have in Mr. James Ford, "the chemist," the only pharmacist in the British Isles—perhaps in the whole Empire—who has three daughters who have followed their father's footsteps; two of them, so far, having passed the Minor. The other



chemist of Thrums, Mr. David Buchanan, "the postmaster," is the man who is responsible for bringing Barrie into the drug-trade by annexing the aforesaid town-house. If there are any in the trade who forget themselves so far as to visit

a place for the sake of the ghosts of Tammag Haggart and Snecky Hobart, they will find it, as Barrie tells us, "altered little, even in those days of enterprise, when places have enamelled labels on them for the guidance of slow people who forget their address and have to run to the end of the street and look up every time they write a letter. Gone, too, is the stair of the town-house from the top of which the drummer roared the gossip of the week on Sabbaths to country folk; but the town-house itself, round and red, still makes exit to the south troublesome."

This prominent castellated structure is the property of the Lord of the Regality (the Earl of Home), whose coat-of-arms it bears; it was here that his ancestors of the house of Douglas held court as Barons of Killymure. The precise date of its erection is not known, but it is certain that it was used as a prison for over 200 years. Veritable dungeons were the cells, canopied with stone arches. Three sides of the original walls of the building—5 feet thick—are intact. Half a century ago the square tower was added.

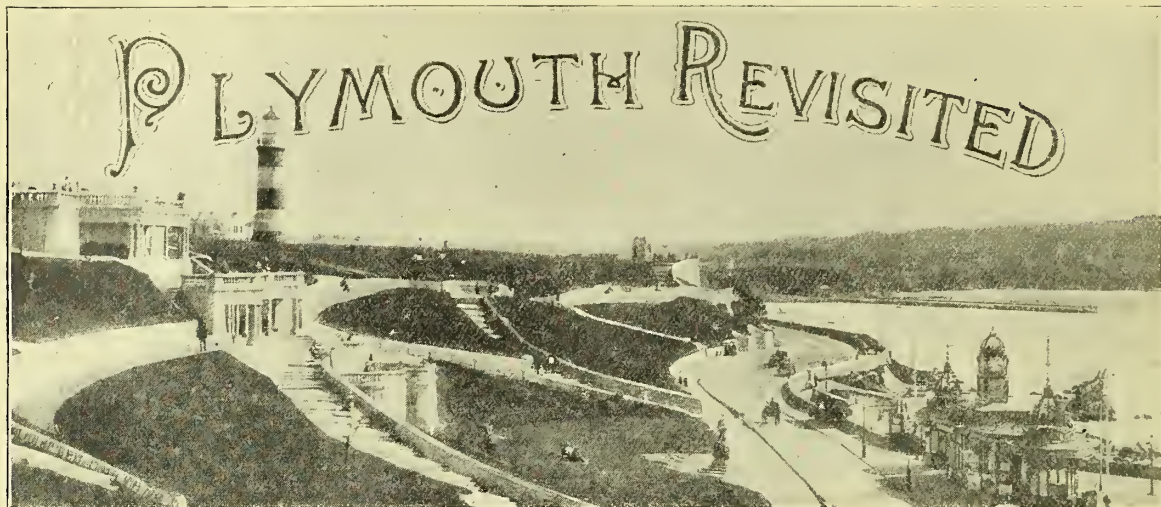
About two years ago Mr. Buchanan required more accommodation for postal work. He wished to keep his two departments distinct while yet under one roof, for he considers that postal work conducted in the same shop as dispensing is not conducive to the prosperity of the pharmacy part. As a good many chemists are postmasters, and as Mr. Buchanan's postal business is larger than any, his opinion will probably be taken as conclusive. A new prison having been provided, he cast his eye upon the "Toon's-house," and, after some negotiating, secured a twenty-one years' lease. It was stipulated that the necessary alterations were not to interfere with the exterior outline of the building, and this has been adhered to. From plans prepared by the Superior's architect, the interior has been converted into a handsome chemist's shop, the post-office adjoining. The picture shows the two separate entrances. On the upper floor, what was the burgh Court room—"a round room (which is oblong)"—is now a large sorting-room and telegraph-room. The new and substantial fitting has been done at the expense of the postmaster. The whole building is occupied, and has been in use for some months. From a window in this room Mr. Buchanan will show you "the window" which has made "Thrums" and its literary son famous.

Mr. Buchanan has been postmaster of Kirriemuir district for fifteen years; he has eight sub-offices under his charge, and a paid staff of forty-one, including four mounted postmen. He was custodian of the early Barrie manuscripts on their timid pilgrimage to London, "perfect blemishes," thought Margaret Ogilvy, his mother, which the "editor-man" would probably not print. And through Mr. Buchanan also there came, in time, the missives (Barrie found them again after she died)—"the envelopes which had contained my first cheques. There was a little ribbon round them."

WM. MAIR.

FREE chemicals to the amount of 149,152*l* were imported into Baltimore in 1898, as compared with 131,056*l* in 1897; and dutiable chemicals 53,694*l*, as against 74,635*l* in 1897.

INSTRUCTION IN PHARMACY.—The Senate of the Royal University of Ireland has intimated to the Pharmaceutical Society that it will, in future, recognise instruction only in a regular medical or pharmaceutical school, not in a chemist's establishment. We are aware that the existence of pharmacy-departments in medical schools is owing to the fact that when the certificates of chemists and hospital dispensers were accepted, those documents could be bought for a sovereign across the counter as readily as a seidlitz-powder. Therefore the Colleges thought it necessary to ensure *bona fides* by establishing their own pharmacy-schools. Without suggesting that the school-courses in this subject are not as genuine as the assiduity of the teacher can make them, we have no confidence whatever in them as proofs of pharmaceutical education. We do not believe in the possibility of communicating a sufficiency of such knowledge in a few prelections in a lecture-theatre, and we would suggest that the licensing bodies should surmount the difficulty by abolishing the pharmacy certificate altogether, and leaving the candidate to "get up" the subject for examination any way he can.—*Medical Press*.



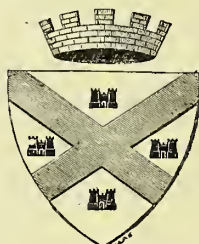
BRITISH PHARMACEUTICAL CONFERENCE.

THE ATHENÆUM, PLYMOUTH,

August 14 and 15, 1877.

PRESIDENT:

Prof. Theophilus Redwood.



Turris fortissima est nomen Jehovah

WESTERN LAW COURTS, PLYMOUTH,

July 25 and 26, 1899

PRESIDENT:

Mr. J. C. Charles Payne.

IT is curious to note that after twenty-two years one or two of the subjects discussed at Plymouth came up again, notably pilocarpine, upon which papers by Dr. Jowett and

the President of to-day extended to the Conference an invitation to hold its next meeting in Dublin, which was



CHARLES JAMES PARK,

Chairman of the local Committee and President of the Plymouth, Devonport, Stonehouse, and District Chemists' Association.

A man of Scotch descent, and the son of Fleet-Engineer G. Park, R.N. Apprenticed to Dumpney & Co., Plymouth. After London and Paris experience went back to Plymouth in 1885 a pharmaceutical chemist, opening a pharmacy on Mutley Plain. Succeeded the late Mr. G. F. Schacht on the Pharmaceutical Council. Is believed to be progressive, and to favour a policy, but the Bloomsbury atmosphere seems to have enervated him. Visitors to Plymouth saw him at his best—courteous, jovial, and solicitous for the comfort of all.

Messrs. Farr and Wright were read this week. The 1877 paper was by Mr. C. T. Kingzett. The fact may also be recalled that at the Plymouth meeting in 1877 Mr. J. C. C. Payne,



JOHN DAVY TURNEY,

Hon. Local Secretary.

A pharmaceutical chemist who has played a most active part in the proceedings of the local Chemists' Association, to which he has contributed excellent papers. Is associated with his brothers in carrying on his father's business in Union Street, Plymouth. As a Local Secretary to the Conference he has been a great success, his modesty equalling the quiet energy of his methodical arrangements.

accepted. Mr. Payne holds, we fancy, the distinction of being the only man to have invited the Conference on two occasions.

sions, each for a different city. The last was at Liverpool, where he asked the members to go to Belfast.

PLYMOUTH PHARMACY.

It is scarcely twenty-two years since Plymouth first gave shelter to the Pharmaceutical Conference. Then the

since, for the membership then was said to be between 2,000 and 3,000, but it is safe to say that the members of to-day are quite as earnest as those of 1877. In 1877, as now the Three Towns combined to welcome the Conference, and Mr. Codd, of Devonport, was the man who spoke for his fellows.



GEORGE BREEZE.

A past President of the local Association and a member of the Conference Local Committee.

Is a very loyal member of the Plymouth Society, and works well in it.



JAMES GEORGE NETTING,

First President of the local Association.

Has been in business at North Road, Plymouth, for thirty-three years. Served his apprenticeship with the late Mr. Gumm there, then went to Exeter, London, and Bradford, returning to Mr. Gumm's employ for a short time before starting business on his own account. Is a member of the Plymouth County Council.



JAMES COCKS.

First Secretary and a past President of the local Association, and Hon. Treasurer of the local Executive.

Was born in Devon, and was apprenticed in the north of that county. Was with Corbyn, Stacey & Co., Poultry, E.C., for five years. In 1895 bought the business of Mr. W. Wey, in Edgecumbe Street, Stonehouse. Has original ideas about pills and how to coat them.



WILLIAM HERBERT WOODS,

Treasurer of the local Association.

A Major man who obtained some of his wide experience with Allen & Hanburys at Plough Court, and with Nicholls & Passeron, Nice.



JAMES MAURICE,

A member of the local Executive.



CHINA THOMAS WEARY,

A Vice President of the local Association

Served his apprenticeship with Mr. Balkwill. Subsequently became a partner, and now has the sole interest in the pharmacy at 17 Trafalgar Place Stoke Devonport.

organisation which [Professor Attfield] has told us was inaugurated in a dirty little back room in Newcastle had just entered its teens, and [Professor Attfield] was still its Senior Hon Secretary. The Conference has not grown numerically

Some good work was brought before the Conference in that year, but there was too little real pharmacy in the proceedings, and we then remarked—

Certain papers seem to have been misdirected for the post—they

should have found their way to Burlington House, and not to the Athenæum, Plymouth. No objection can be raised to a strictly chemical paper here and there; but when the continued analyses of the aconitines is followed by that of capsaicin, to which a report succeeds on the characteristics of essential oils, with special reference to the hydrocarbons therein contained; when the terpenes of the oil of sage were laboriously investigated, and

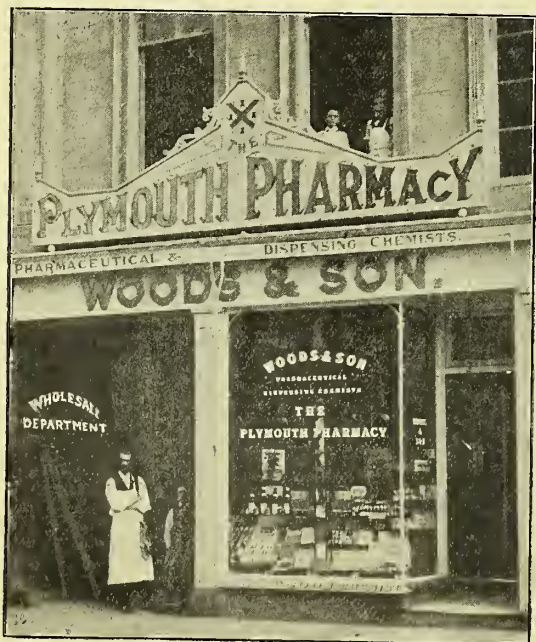
mark in pharmaceutical literature and research, but at home it makes no pretence in these directions. Its Chemists' Association, however, will not give place to any other in the kingdom for strict attention to matters which make



8 EDGUMBE STREET, STONEHOUSE.

This pharmacy was established by Mr. W. Wey, and taken over by Mr. Cocks in 1895.

hederic acid received a double notice; when the alkaloid supposed to be present in *Narcissus Pseudo-Narcissus* preceded a note on diphenylamine, and blood albumen was described as well as pilocarpine, we are justified in our observation that the meaning of the term pharmaceutical with reference to the British Conference was disregarded. We plead solely for the future larger introduction of such topics as may prove serviceable to that community of druggists whose history was so carefully traced out in the presidential message.



50 BEDFORD STREET, PLYMOUTH.

The home of the arca-nut tooth-paste.

A slight tendency in this direction still remains, but the Conference has certainly got rid of several contributors who then found it to be an excellent medium for advertisement.

In itself Plymouth has no great pharmaceutical distinction which has not been acquired during the past decade. It has given to pharmacy several good men who have made their



50 UNION STREET, PLYMOUTH.

Mr. Breeze made this fourteen years ago a branch of his Devonport business, and it was disposed of by him to Mr. F. H. Ralph about five years ago. It is noted for theatrical requisites and "Hoe Breeze" perfume.

for better business and improvement of the juniors. The Association of which Mr. C. J. Park is President is one of recent date, and succeeds the "Association for Chemists and Druggists for Plymouth, Devonport, Stonehouse, and neigh-



TRAFALGAR PLACE, DEVONPORT.

Established 1836 by the late Mr. S. Hamand, subsequently taken over by Barkwill & Co., of Plymouth, and now owned by Mr. C. T. Weary. Mr. Hamand's business embraced cigars, coffee, and white-lead by the hundredweight; Mr. Weary's is mostly dispensing.

bourhood." The latter started in 1868, but appears to have been still-born—at any rate history has nothing to tell about it—and there was no other formal union between chemists of the Three Towns until 1893, when the present Association



THE ROYAL MILITARY HOSPITAL, DEVONPORT.

was formed, a few of the leading chemists summoning all their colleagues to a meeting which there and then decided to form the Association bearing the names of the Three Towns in its title. It was well recognised that for the success of the Association much depended upon the integrity of its first officers, and in selecting Mr. J. G. Netting as first President the members knew they had in him a man of extended business experience and sound judgment. With him they associated in the Secretaryship Mr. J. Cocks, to whom, in a very great measure, the success of the Association is due. Mr. Netting was succeeded in the chair successively by Mr. C. J. Park, Mr. G. Breeze, and Mr. Cocks, the last-named being elected when he gave up the Secretaryship, after four years in office. Mr. C. J. Park's re-election this

sion on which Plymouth lads have distinguished themselves in the Herbarium competition, for Mr. E. M. Holmes, the President-elect of the Conference, first became known to pharmacists through his success while a Plymouth apprentice in collecting botanical specimens. The Association's Trade Section is one of the best of the kind in the kingdom; it deals with all sorts of topics affecting the members as traders, such as railway carriage, fire insurance, legal advice, and so on. The Association has also, on more than one occasion, given the lead to the whole country on what may be called the talking-questions of the day—the



MARINE BIOLOGICAL LABORATORY.

year was dictated by his knowledge of the leading men of pharmacy and his experience in pharmaceutical administration—factors which it was believed would be of material advantage in entertaining the Conference. The membership of the local Association was seventy-five at first, now we understand it is going on to 200, this figure including the lively Junior section, for whose members good classes have been organised and conducted by senior members of the Association. Botany has been a strong point, indeed, so well taught that two of the pupils last year carried off honours in the Pharmaceutical Society's Herbarium competition, one taking the silver medal and another a certificate of merit. This was not the first occa-



E. J. ALLEN,

Director of the Marine Biological Laboratory.

gentle alliteration "Plymouth Programme" being the immediate precursor of the Blackburn Brass Band. On the social side the Association has a large experience, which specially fitted the members to entertain the Conference. Since its formation, in 1893, the committee have arranged balls, outings, smoking-concerts, and annual dinners with excellent results, members being brought together in a less business-like way than generally obtains in chemists' associations.

The Three Towns are not particularly strong in unique pharmacies, as the few examples which we give may show. Apart from the pharmacies and the natural beauties of

the district, which were sketched in our issue of July 8, the most attractive thing in the district to pharmacists is the

ROYAL NAVAL HOSPITAL.

This is situated in Stonehouse, and is one of nine in the British Empire. The hospital itself is not, like Netley, very imposing, nevertheless it has within it sixty wards and 650 beds, while a very large fever-wing is in course of erection. Three pharmacists are employed in the hospital, only Haslar, with four dispensers, being larger. The dispensing done in the dispensary differs little, if at all, from what one expects to find in a seamen's hospital, and the dispensary is quite prosaic in its conventionality—a big apartment with double dispensing-counters in the centre, and the wall-shelves and cupboards well stocked with shop-rounds and the like. The dispensary has a "wholesale" department from which supplies for Devonport and Pembroke Dockyards, Bodmin, and other depôts, are sent out. The store-rooms are imposing, the principal one being for "service afloat," where stores sufficient for 14,000 men are kept in stock, this being exclusively for men-of-war who call at the port to be refitted, and whose doctors send for what they want; but torpedo-boats do not carry a doctor, and they get their medicine-supplies in concentrated style, with names and uses of the drugs. In the "mobilisation" store rows of medicine-chests of various sizes, fitted for immediate use, are ranged along the sides. A No. 1 (the largest) chest contains sufficient to "fix up" 300 men; a vessel of the *Terrible* class would require three of these. With each chest a set of surgical appliances, with lint, splints, &c., is also supplied. Amputation-cases for field use, suitable for strapping to the back, and fitted with necessary appliances, are found in the "hospital store-room," where stock is kept for home-consumption. There is also a wine-store with a good array of Martell's three-star brandy, Coates's gin, Moët champagne, and old port, the patients evidently being well looked after in this line, at least, whatever they may be in a ship-of-the line.

Except for the fact that the dispensary supplies ships and sailors, and the hospital is approached by sea, the Naval Hospital dispenserships are not naval; the dispensers' duties are on shore. In the whole of the British Empire there are fourteen of these berths; they are Civil Service appointments but are not highly paid. A kindred establishment to this is the

ROYAL MILITARY HOSPITAL.

This is situated at Devonport. Several thousands of soldiers are constantly stationed in the Plymouth district, and it pays to have a hospital on the spot. This building consists of five large blocks, three of which are shown in the accompanying illustration. It occupies a pleasant site close to the Raglan Barracks, Devonport, and overlooking a narrow strip of sea-water, with the Royal Naval Hospital in the foreground. The grounds surrounding the Military Hospital are very charmingly laid out. Within the past few months the hospital block shown on the extreme left of the photograph has been rebuilt. One of the treats offered to members of the Conference during their stay was the free run of the

MARINE BIOLOGICAL LABORATORY.

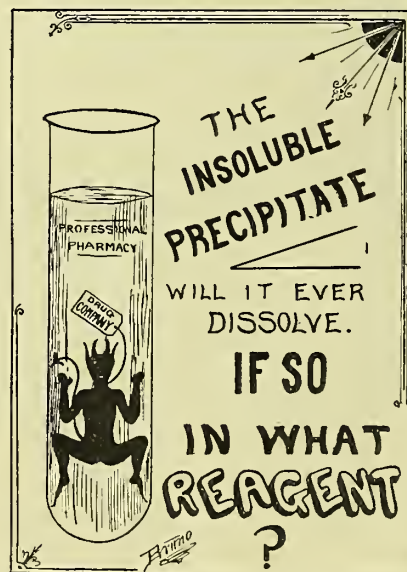
This institution owes its origin, in part at least, to the magnificent scientific results which were obtained during the *Challenger* expedition, but before that the scientific advantages of marine biology had been demonstrated by the work achieved at the similar and first institution of the kind in Italy. The Plymouth Laboratory owes its exist-

ence to a combination of naturalists and persons interested in our sea-fisheries. This is known as the Marine Biological Association, and the President is Professor E. Ray Lankester, F.R.S. Some idea of the work of the laboratory is given in the last annual report, from which we learn that during the year the investigation of the natural history of the mackerel, commenced last year by Mr. Garstang, had been continued, and a report on the variations, races, and migrations of this fish had been published. A systematic study of the physical and biological conditions prevailing in the waters at the mouth of the English Channel had also been commenced, which it was hoped would throw light on the causes which determine the movements of migratory fishes. The examination of the fauna and bottom-deposits between the Eddystone and Start Point had been concluded by Mr. Allen, the director of the laboratory, and a report on the subject had appeared in the *Journal* of the Association. Seventeen naturalists and eleven students had worked in the laboratory, in addition to the members of the regular staff.

The laboratory is situated at the eastern end of Plymouth Hoe, between the walls of the citadel and the sea, and overlooking the Sound. It was opened in 1888. On the ground-floor of the building is the aquarium or tank-room, where a variety of fishes and invertebrates are kept under observation in the living state. The tanks are filled with sea-water, which is kept constantly circulating by means of a pump worked by a gas-engine in the basement. On the same floor is an exhibition collection of preserved specimens, illustrative of the development and of the food of fishes.

Above the tank-room is the laboratory proper—a large room divided into a number of working-compartments, each investigator being supplied with the materials necessary for advanced biological research. On the same floor are the chemical and photographic rooms, and a large room devoted to the preparation and storage of preserved specimens, which are sent out to museums and teaching-institutions. The building also contains a library, the shelves of which are well stocked with zoological and fishery literature, and a type museum of the marine flora and fauna of the neighbourhood.

The Association possesses a small steamboat, fitted with dredges, trawls, and nets for the collection of specimens. The permanent staff consists of the director of the laboratory, Mr. E. J. Allen; the naturalist responsible for the fishery-investigations of the Association, Mr. Walter Garstang; and the director's assistant.



At the Plymouth Federation meeting this week the bottles were emptied in the attempt to remove this black spot. Wise men from East Lancashire, Liverpool sages, Plymouth brethren, and Glasgow k —, we mean billies, now present the problem to the trade for solution.

PRESIDENTIAL ADDRESS TO THE CONFERENCE.

By John Chilcott Chas. Payne, J.P., M.P.S.I.

Mr. Mayor, Ladies and Gentlemen,—Twenty-two years have passed since I first had the privilege of attending a meeting of the British Pharmaceutical Conference; by a strange coincidence it was at this historic seaport town of Plymouth. I distinctly remember the active General Secretary (Professor Attfield), who appeared to know everybody, calling me by name to address the meeting. The object of my visit was to convey an invitation from the Council of the Pharmaceutical Society of Ireland to the members then assembled to hold the following year's meeting for the first time on Irish soil, in the city of Dublin. No doubt your Executive Committee had misgivings as to the wisdom of accepting the invitation, for reasons which will be apparent to you at a later period of my address. Nevertheless the invitation was accepted, the members unanimously agreeing to venture across the Irish Channel. The hospitality of Plymouth pharmacists was again offered for a second time at its meeting last year, which was held in the commercial capital of Ireland—Belfast. On the former occasion we adjourned to an Irish meeting-place; to-day's meeting is an adjournment from one. For the benefit of those who are present for the first time, I may be pardoned if I inform them that the Conference has not met in Ireland during the intervening years, and Irish members hope the meetings in their country will be more frequent in the future than they have been in the past. Before passing from what may be described as the introductory portion of my address, let me call your attention to the presence this day of one member of our Conference who in its early days worked unceasingly for its success, and to whom we owe much of its present position among the scientific bodies of this country. I refer to Professor Attfield, who, I am delighted to find, is still ready to combat all statements not in accordance with chemical laws. For the first time in its history the Conference has elected an Irish pharmacist as its President. The greatest difficulty that presented

itself to me was to find a subject your long list of distinguished Presidents had not already brought before you. It occurred to me that a short account of the history of



JOHN CHILCOTT CHARLES PAYNE, J.P.

President of the British Pharmaceutical Conference, pharmaceutical chemist, and formerly a member of the Irish Pharmaceutical Council.

The eldest son of William Payne, and born at Wellington, Somerset. His second cousin, Alfred Payne, was with Balkwill, Plymouth (1845), and afterwards moved to Galen Chemical-works, Ellingshall. The Conference-President was educated at Weston-super-Mare, and Independent College, Taunton; served four years as apprentice to Mr. Thos. H. Hooks, Sherborne, Dorset, and afterwards was an assistant at Southport and Surbiton Hill. Went to Ireland in 1867 as manager to Wheeler & Whitaker, of Belfast Apothecaries' Hall. When the Irish Pharmacy Act passed he presented himself for the examination, passed it, and was the first examined pharmaceutical chemist to be elected to the Council. Resigned in 1888 after twelve years in the office. Made the acquaintance of the Conference at Plymouth in 1877, and has been loyal to it ever since. Has faith in it, and told his fellow-members in 1891, at Cardiff, that they should be independent of the British Association, and in Edinburgh the following year his suggestion was adopted. Mr. Payne is a man of striking appearance, cultured, good company, a graceful speaker, and a successful man of business. His pharmacy in Oxford Buildings, Shaftesbury Square, Belfast, is one of the finest in Ulster.

PHARMACY IN IRELAND

would be not only fitting to celebrate an occasion which marks an epoch in the lives of the Societies represented, but also acceptable to you who have honoured me by placing me in the position I now occupy. Many of the facts which I shall relate will no doubt be familiar to you, but if they interest you half as much as they have interested me—being the story of an evolution of order from disorder, and law from the absence of it, in the land of my adoption—I shall be quite satisfied. We are so accustomed to the phrase that it almost seems bathos to say this has been a century of progress; probably in no field of labour employing the highest powers of the intellect have such strides been made as in the scientific, and I think I am justified in saying that the healing art has made as great progress, and with equal benefit to the human race, as any branch of science. A necessary consequence of the resulting accumulation of knowledge has been specialisation in medicine and the allied professions; and this is not to be wondered at. In the dark days when there was so little to know, apothecary, physician, barber, and surgeon might find it a matter of difficulty to keep from encroaching on one another's domains. Now the barber is perhaps the only one who can begin the study of his occupation in life with the hope of ever attaining a perfect knowledge of it; and things have come to such a pass that we have one of the greatest thinkers and scientists of the day—Professor Huxley—declaring, "I would abolish *materia medica* from the medical curriculum. I cannot understand the arguments for obliging a medical man to know all about drugs and where they come from. Why not make him know all about cutlery because he uses knives?" As far as is known from public records,

the first legal recognition of apothecaries in Ireland was contained in

A CHARTER GRANTED IN 1446

to a guild numbering among its members apothecaries and surgeons besides others. This guild, which seems to have been somewhat heterogeneous, was broken up in James II.'s reign, and one limited in its membership to barbers, periwig-makers, surgeons, and apothecaries was established. Ultimately, in the reign of George II., the union between the last two was dissolved, and the Apothecaries' Hall received a separate charter. These apothecaries, although they kept open shop and compounded and retailed drugs and medicines, are not to be confounded with the class bearing the same name in England, as they had considerable medical knowledge, and in later days at least had to pass an examination in medical subjects; and they were in the habit of giving advice to those who could not afford the expense of a physician. In 1695 we read of an attempt on the part of the Dublin College of Physicians to obtain an Act of Parliament granting its members the sole right to practise medicine in Ireland. This, however, proved abortive, owing to the opposition of the apothecaries and surgeons, the former continuing their own business as well as the compounding of the physicians' prescriptions, in which work they were the only persons legally qualified up to the passing of the Pharmacy Act of 1875. The guide-book on pharmacy used in the earlier part of the present century was

THE FAMOUS DUBLIN PHARMACOPŒIA.

This was published by the King's and Queen's College of Physicians, under powers granted them by an Act passed by the Irish Parliament in the first year of George III.'s reign. By it it was declared lawful for the President and Fellows of the College to publish a Code containing "a catalogue of such drugs and medicines as they should judge necessary for the prescriptions of the physicians and surgeons, together with forms and rules for compounding the same chemically and galenically," and the Act directed that any person who should manufacture or compound drugs by any other rule should be penalised. The first editions of the work appeared in 1794 and 1805. Their circulation was confined to members of the College. However, in 1807, Dr. Percival, Professor of Chemistry in the College, acting under a committee, wrote a new edition open to the public. Though a man somewhat advanced in years, he set about revising his work, assisted by Mr. Donovan, the inventor of the liquor arsenii et hydrargyri iodidi, which is often prescribed as liquor Donovanian, and still adorns the British Pharmacopœia; but, unfortunately, he broke down, and was forced to desist from his labours, the work being finished by Dr. Barker, his successor in the chemical chair. The new edition appeared in 1826. Shortly afterwards, on a proposal to issue another edition of the London Code, it was suggested that a Pharmacopœia common to Great Britain and Ireland should be published. This proposal did not come to anything, and we read the reasons in the London edition published in 1836—that "it was requisite to consult with the Fellows of both Colleges, and as, on account of the great distance, this was with difficulty accomplished"—there were neither railways nor steam-packets in those days—"it became necessary to abandon the negotiations which had been commenced." When we add to this that all three Colleges would have been called upon to make sacrifices the consideration of which they could not at the time entertain, the difficulties became almost insurmountable.

Consequently, in 1847 the Dublin College set about the preparation of a new edition of their work, which was published in 1850. It has the distinction of being the first edition written in English, those preceding it having the knowledge they contained hidden from the vulgar mind by the employment of Latin. Among other improvements it directed the use of a system of weights and measures comprising the Troy grain and the avoirdupois ounce and pound, with a new scruple and drachm. This change was considered necessary, as the old system was the cause of considerable confusion to the apothecary, who had to buy the drugs wholesale by one measure and sell them by another.

In the course of a discussion which took place at a meeting of the Pharmaceutical Society of Great Britain concerning the 1850 edition, the late Professor Redwood is reported to have

expressed the opinion that the alteration was illegal, but the Act which gave the College power to publish the Pharmacopœia also gave them authority to direct "the measures, weights, and scales" by which the drugs named in it should be sold, and enacted that any persons using any other should be fined. In the nomenclature the term "confections" was applied to the old confections, conserves, and electuaries, and to remove the confusion existing in the case of the chloridic compounds the term "chlorinata" was borrowed from the London edition of 1836. The chemical names of the salts of mercury were abandoned, and names such as "calomel," "corrosive sublimate," and "red" and "green" iodides adopted. The Medical Act of 1858 brings the history of the Dublin Pharmacopœia to a close, as by it powers were vested in the General Medical Council to publish the British Pharmacopœia, and by another Act it was arranged that that book should supersede the publications of Edinburgh, Dublin, and London. The first edition of the new work was published, as you know, in 1864.

SALE OF POISONS IN IRELAND.

With regard to poisons, under powers granted them in the Act of 1760 the Dublin College ordered that all prescriptions for external use should be made up in angular bottles, all for internal use in round, and that certain poisonous drugs named should be kept in angular, the remainder in round bottles, and that they should be delivered in the same. We do not hear of any further legislation in the matter until 1851, when an Act was passed putting certain restrictions on the sale of arsenic, with which you are familiar. This Act possesses a certain interest from the fact that it is one of the few Acts relating to our profession which have effect on the whole United Kingdom. I do not mean to suggest the usual injustice to Ireland, but there seems to be a large amount of time wasted making laws for England and remaking them for the sister country, and to one unversed in the ways of Westminster the matter is difficult of comprehension. It would appear that after the passing of the English Pharmacy Act of 1868 our Saxon friends were anxious to include Irish pharmacists in their embrace, and Mr. Abraham gave notice at the August meeting, 1869, of the Pharmaceutical Society that he would move at the October meeting "that steps be taken to assimilate the laws which regulated the practice of pharmacy in Ireland and Great Britain respectively." The following letter from Mr. John Grattan, a well-known and highly respected apothecary of Belfast, appeared in the *Pharmaceutical Journal*, dated October, 1869:—

Sir,—I have just observed with great satisfaction Mr. Abraham's notice relating to pharmacy in Ireland reported in the August number of the *Pharmaceutical Journal*, having long considered that the transfer to the Pharmaceutical Society of Great Britain of the misapplied powers entrusted to the Dublin Apothecaries' Hall in 1791 could be but a question of time, and I am strongly of opinion that no time could be more opportune than the present. Compulsory pharmaceutical education is now the law of England, as it has been that of Ireland for upwards of seventy years, however much of late overlaid by a press of conditions neither required for the efficient discharge of the duties of the apothecary nor authorised by the Irish Apothecaries Act of Incorporation; and I can see no valid reason why the holder by examination of the Pharmaceutical Society's Major diploma should not be at liberty to practise pharmacy in Ireland as well as in any other section of her Majesty's dominions. I must, however, strongly deprecate the extension to this country of the Modified examination, devised to protect in England interests of an uneducated class of dispensing chemists, such as has no existence here. With this single reservation, I trust the proposed movement will receive the cordial co-operation of every person in Ireland at all desirous of the advancement of pharmacy. A short Bill, extending to Ireland the authority of the Pharmaceutical Society, and authorising the immediate introduction of its full curriculum, would not interfere with any existing rights, no individual at the present moment being legally entitled to keep open shop for dispensing medicine in Ireland without a licence from the Dublin Apothecaries' Hall, only to be obtained by an examination which, I must do the Hall the justice to say, has always been of a very efficient character, though of late years constituting but a portion of the examination for its medical certificate. With regard to the Dublin Apothecaries' Hall I conceive there can arise no difficulty whatever. Having long since looked down contemptuously upon its original constitution, and having succeeded in transforming itself into a school of medicine, it should rejoice exceedingly at being relieved from the burden of

an irksome duty, derogatory to its present dignified position and exalted functions—the distasteful duty of educating the mere apothecary—a requirement no longer to be postponed.

Wishing Mr. Abraham's proposed movement, therefore, the success to which sound policy and simple justice fully entitle it,
I remain, your obedient Servant,

JOHN GRATTAN.

At the October meeting of the Council, I find, Mr. Abraham brought forward his motion, and it was referred to a committee to report upon. The report did not result in the Pharmaceutical Society of Great Britain extending its influence to Ireland, as I shall presently show you. As a set-off to the English Pharmacy Act of 1868, a Bill regulating the sale of certain drugs in Ireland passed through the Houses of Parliament in 1870. The restrictions were somewhat similar to those put upon arsenic, with the exception of the clause directing that it should be coloured with indigo or soot. It also ordered that they should be labelled "Poison," and that the name of the vendor should be inscribed on the parcel containing them. Of course these laws did not apply to the prescriptions of legally-qualified medical practitioners. The Act also gave power to the King's and Queen's College of Physicians to recommend such substances as they thought fit to Her Majesty's Privy Council to be added to the Poisons Schedule Bill: thus the sale of phosphorus, chloral hydrate, nux vomica and its preparations, ether (owing to its increased consumption among the poorer classes in the North as a stimulant), phenol, all oxalates, biniodide of mercury, and preparations of strychnine have been brought under control; there was also a clause in the Bill extending the Adulteration of Food and Drink Act to Drugs.

APOTHECARIES AND DRUGGISTS.

From what I have said it will be understood that all this time the only pharmacists recognised by law were those who held the qualification of the Apothecaries' Hall, and they were also permitted to prescribe; but the qualification was not so widespread as the fact seems to suggest, and in many of the small towns those requiring medicine were often compelled to make use of druggists whose only qualification was an apprenticeship more or less served in the shop of an equally qualified, or, rather, unqualified, druggist, where they might learn a great deal if they were so inclined and if their masters understood their business, or, having served their time and, perhaps, wasted it, go into the world to bring discredit on an honourable profession; in those days I fear that Samuel Garth's criticism on English pharmacy could have been applied with some truth to the practice in Ireland:—

Some fell by laudanum and some by steel,
And death in anguish lurked in every pill.

In some towns even these gentlemen did not exist, and in those days, when railways were scarce and carriers' carts the commonest means of conveying parcels, this was a matter of some concern to those residing in the towns. There is no doubt that the chemists and druggists had a grievance: many of them were men of good education, and in every way fitted for their work, but debarred from obtaining the apothecary's licence by the unnecessary breadth of the qualifying examinations, which included papers in medicine, surgery, midwifery, and anatomy.

Now, I do not wish to suggest that the average chemist and druggist was unequal to the mental effort which those subjects would have demanded from him; but to one desirous of perfecting himself in pharmacy they were more or less waste of time and of what is usually associated with that valuable commodity—money. Consequently, those who wished to take up the profession of pharmacy were often forced to attain their object by other means, though that meant the constant risk of prosecution by the Apothecaries' Hall; nor does the case of the unlicensed appear any weaker to us when we remember that occasionally an apothecary kept more than one shop in which there might or might not be a qualified assistant. Of course, one can sympathise with men who, having spent considerable time and labour in obtaining a qualification, saw the wicked unqualified flourishing like the green bay-tree.

ORIGIN OF THE PHARMACEUTICAL SOCIETY.

The feeling between the two classes became gradually more intense, and things came to such a pass that when, in

1874, the British Association was to meet in Belfast, and the Pharmaceutical Conference, as was its wont, proposed to follow its example, a deputation from the apothecaries in Ireland, consisting of Dr. H. Whitaker, Mr. R. W. Pring, and Mr. Harrington, was received, who stated that it would be impossible for them to meet the unqualified men as brethren. As a consequence, the meeting was held that year in London. I think it is only fair to these gentlemen to say that they were not merely desirous of making their degree a *sine qua non* in the pharmaceutical profession, but had applied for leave to create a second grade of compounders who should not prescribe. On this, however, a third element was introduced into the quarrel in the shape of the Irish College of Physicians, who practically reiterated the demand of 1695 by opposing all tendency to give the Apothecaries' Hall powers to grant separate licences in prescribing and compounding. The College was successful in preventing them in their efforts, and the dispute resulted in what was undoubtedly the best thing for all parties—in the formation of a new Society, on lines somewhat similar to the existing English one, by the Pharmacy Act of 1875.

This Act constituted a society of pharmacists, to be called the Pharmaceutical Society of Ireland, and one of its first clauses nominated certain professional men as members, and directed that they should form the first Council. It had been originally intended that one-third of these should be drawn from the physicians, one-third from the apothecaries, and one-third from the chemists and druggists. But this arrangement was found to be unworkable, and the first Council consisted largely of licensed apothecaries. Every person registered under the Act as pharmaceutical chemist was to be considered qualified for election to the membership of the Society; and the Council had power to determine upon allowing certain persons to acquire the title "chemist and druggist" subject to such condition as they should think proper. In this connection, I may say that the first regulation passed by the Council was to the effect that for the present there should be but one qualification—that of pharmaceutical chemist; Queen's counsel opinion having been taken on the matter, with the result that they were warned that to register chemists and druggists under the Act would be to license them to compound medicines—an Act which would have created an anomaly of having two classes of pharmacists in Ireland, one of which would have been compelled to pass an examination to obtain licences, while the other would not be compelled to do so. This and all the regulations of the Council were to become law by the approval of the Lord Lieutenant and the Privy Council. The members of the new Society were to consist of—

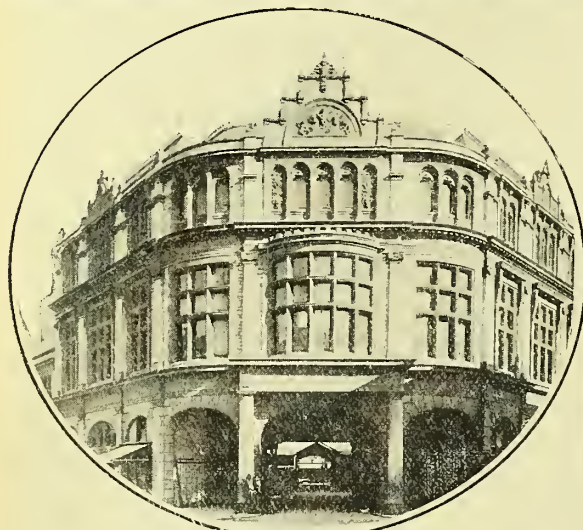
- (1) Members of Council as nominated.
- (2) Persons examined.
- (3) Licensed apothecaries on payment of fees; while chemists and druggists, had the Council decided to register them, would have had the right to be elected as associates.

The Bill caused some unnecessary alarm among English pharmacists. Some thought that the examinations would be made too easy, and that Englishmen, having crossed the Channel to obtain the Irish qualification, would return to practise in their native land, with the hope that the "I." at the end of the letters after their names would pass unnoticed. The title "pharmaceutical chemist" was thought to be in danger, not only of injury, but destruction; and, when the Bill was before the House of Commons, a deputation from the Pharmaceutical Society of Great Britain was received by the Chief Secretary for Ireland, which strenuously advised the

EXCLUSION OF THE RECIPROCITY CLAUSE

which it contained, with the result that the Government withdrew it. The feeling was perfectly natural, as the Bill could not of necessity force the Council to keep their examinations at a high standard, though it dictated the subjects upon which candidates were to be examined. The new Society soon demonstrated that it was to their interest that the standard should be high; for though, for the first two years, as was only fair to those already in practice as chemists and druggists, the examinations were kept at a moderate level, they have been getting more difficult every year, and, as test of the efficiency of the pharmaceutical chemists, they are second to none. The candidate is now required to pass a

Preliminary examination, the subjects in which he is examined being Latin, English, mathematics, physics, botany, chemistry, and a modern language; afterwards he has to pass an examination in *materia medica*, botany, pharmaceutical and general chemistry, practical pharmacy, and the reading and translation of prescriptions. He must present certificates of having attended classes in botany and *materia medica* at a recognised school, and one stating that he has worked for one hundred hours at a bench in a chemical laboratory, and make a declaration before a magistrate that he has been for four years an apprentice or assistant with a qualified pharmaceutical chemist, or four years with a registered druggist and two years with a pharmaceutical chemist. Having accomplished all this success-



THE CORN EXCHANGE, PLYMOUTH.

Luncheon was served on the first floor of this building to the members of the Conference on Tuesday and Wednesday.

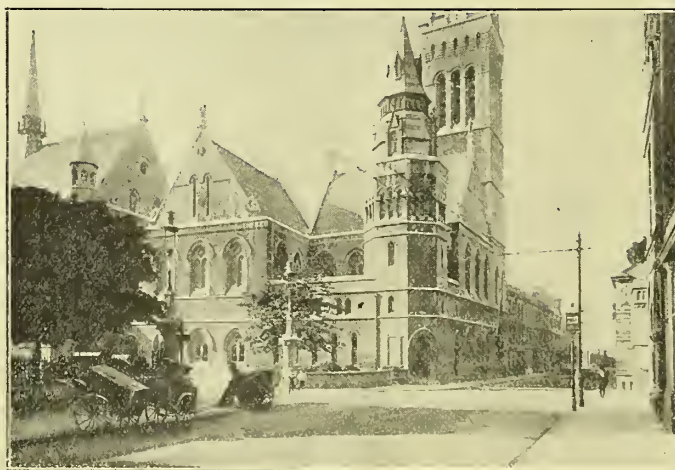
fully he is, after certain forms and the payment of certain fees, at liberty to style himself pharmaceutical chemist, and he may be elected a member of the Pharmaceutical Society of Ireland. The year following the passing of the Pharmacy Bill, Government brought in a Juries Act for Ireland. Under the list of "professions" we find pharmaceutical chemists exempt from service.

DRUGGISTS AND DISTINGUISHED MEN.

Owing to the action of the Council in refusing to register a second grade for the reasons I have given, there still re-

mained a body of men labouring under a grievance, and to remove this the Pharmacy Act Amendment Bill was introduced into the House of Commons in 1890, and eventually became law. It repealed all reference to chemists and druggists in the old Act, and made arrangements for their present registration. All who were in business in 1875 were entitled to registration, but any who had come into business since that date, or who intended going into business, were required to pass an examination; successful candidates were, on payment of certain fees, entitled to be elected associates of the Pharmaceutical Society, but were forbidden to style themselves as such, and they were not permitted to compound the prescriptions of medical men. The only question which remains to be considered is, Has the new Society been a source of benefit to the public and to pharmacists in Ireland? I am of opinion that it has, not only in the large cities where the facilities for purchasing medicines and having prescriptions compounded have been immensely increased, but in the smaller towns, very few of which are without a qualified pharmacist. Now I do not mean to convey the impression that there were not clever men in the business before the entry to it was by examination, but, as is the way with examinations, while those aiming at a maximum of proficiency are not greatly affected, those aiming at a minimum, or at none at all, are awakened to the fact that pharmacy is not the life-work for which nature intended them, and the average standard is considerably raised. To pharmacists the Act has been of undoubted value, inasmuch as it has opened the world to them, the Irish licence being now recognised in all the colonies, in South Africa, and in some American States. Ireland's apothecaries and chemists have had many outstanding men in their ranks whose names will always be remembered in the history of pharmacy in their native land. Among others I may mention Higgins, on whose work Dalton based his atomic theory; Donovan, whose name I have mentioned, and whose papers are still read; Kane, who wrote on the elements of practical pharmacy as far back as 1831; Whitla, author of a "*Materia Medica*" with a wide reputation, professor of the subject at Queen's College, Belfast; and Tichborne, a well-known professor of chemistry in Dublin, who has been a member of the Council since the inception of the Society.

I cannot close my address without reference to the bonds of fellowship which are growing between the pharmacists of Ireland and those of Great Britain. The fact that the last Conference met in Belfast is significant, and it is with no egotism that I appreciate my position in this chair, but rather as an honour done to my profession on the other side of the Channel. How far these bonds may continue to grow I cannot say, but though the time is not yet ripe for the accomplishment of it, I have a vision of a closer union and a stronger harmony tending to the advancement of pharmacy and all concerning it in all three countries during the new century now so fast approaching.



THE GUILDHALL OF PLYMOUTH.

Here are the Law Courts, where the sessions of the Conference were held. It is an imposing pile, and centrally situated.

CONFERENCE COMMUNICATIONS.

We have to acknowledge ungrudging assistance in reporting these papers given to us by Mr. W. A. H. Naylor, Senior Secretary of the Conference. We have also to thank authors of the papers for photographs from which the thumb-nail sketch-portraits have been drawn.

Assay of the Official Liquid Extract, Wine, and Vinegar of Ipecacuanha.

I

By E. H. FARR, F.C.S., and R. WRIGHT, F.C.S.,
Pharmaceutical Chemists.

The process for the determination of the alkaloids in liquid extract of ipecacuanha is undoubtedly the most unsatisfactory of all official assay-processes, and has been subjected to severe and well-merited criticism and unqualified condemnation by Wilson.* The alternative process proposed by Wilson is in several respects a great improvement upon the official one,



R. Wright



E. H. Farr

and has received commendatory notice from Moss, who states that "it yields the alkaloids in a purer condition, with greater accuracy and expedition."† The practical testing of both processes, together with a critical examination of the entire subject of ipecacuanha-assay, has, however, convinced us that it yet remains for practical pharmacists and laboratory experts to devise a process of assay for the galenical preparations of the drug which shall combine the requisites of economy and accuracy with the rapidity of working.

The object of this note is to place on record the results of experiments which it is hoped may contribute somewhat towards the attainment of this end. It may be well to allude a little more in detail to what we consider to be the faults and drawbacks of the two processes above mentioned:—

(a) One fault common to both is that the quantity of material used up in each determination is far greater than is either necessary or desirable. The B.P. requires 20 c.c. extract, and 75 c.c. of chloroform, for the extraction of about 0.4 gramme (6 gr.) of alkaloids. This objection is emphasised when it is considered that for an assay-process like this only enough material need be taken as may contain from 0.02 to 0.05 gramme of alkaloids. For the assay of the liquid extract of ipecacuanha 1 or 2 c.c. is ample in the hands of an expert, and in no circumstances should more than 5 c.c. be employed. When a much greater quantity is taken the amount of resinous matter present renders it almost impossible to shake out the alkaloids without resorting to a special method for prior removal of the resinous extractive. It is in carrying out this part of the official process that the principal loss of alkaloid occurs.

(b) There is a further loss involved in the undue dilution of the liquid. This objection applies in a less degree to Wilson's process, where distinct traces of alkaloid are left both in the mother-liquor and also in the ether-chloroform washings. Wilson claims that if his modification is carefully worked the precautionary treatment of these washings with acidulated water is unnecessary. This statement is not borne out by our experience.

(c) In both processes the mistake is made of regarding the weighed product as pure, or approximately pure, alkaloid. According to Wilson's own showing, however, this could not possibly be the case, seeing that the results obtained by weighing were invariably much higher than those indicated by titration. In his note on the subject (*vide antea*) he does hint at the possible presence of some impurity, but accounts for the great discrepancy between the gravimetric and volumetric results by supposing the presence of a third alkaloid having a much higher molecular weight than those of the principal alkaloids.

It is true that Paul and Cownley* report the discovery of a third alkaloid of higher molecular weight than emetine and cephaeline, but the amount found by them (0.04 per cent. of the total in one specimen of the root, and 2 per cent. in another specimen) is quite insufficient to affect the results at all seriously. And a subsequent consideration of the chemistry of the ipecacuanha alkaloids by Hesse† serves to confirm our opinion, founded upon a number of experiments, that for volumetric determination an equivalent calculated from the molecular weights of emetine and cephaeline gives perfectly accurate and reliable results. The method employed in order to establish the fact that the alkaloidal residues obtained by the official and Wilson's processes contained other than alkaloidal matter was as follows:—

The crude alkaloids from 5 c.c. of liquid extract were dried in an air-oven at a temperature below 80° C. till of constant weight, and the weight noted. The residue was then dissolved in water containing 1 per cent. sulphuric acid, and the alkaloids precipitated by the addition of an excess of solution of iodine in aqueous potassium iodide, the precipitate filtered off, washed with weak iodine-water, and allowed to drain. The alkaloidal hydriodides were then washed through a hole pierced in the bottom of the filter into a bottle, and decomposed by the addition of an excess of sodium thiosulphate. The solution was filtered into a separator, the filter washed with a little water, and the filtrate and washings bulked. A slight excess of ammonia was then added, and the alkaloids shaken out with chloroform. The chloroformic solutions were bulked and evaporated, and the alkaloidal residue dried and weighed. It was then dissolved in a little alcohol, a calculated excess of decinormal hydrochloric acid with some distilled water added, and the liquor titrated back with vingtinormal soda, cochineal being used as indicator.

In order to render the test perfectly conclusive each determination was performed in duplicate: in the first the impure alkaloid was titrated, and in the second the alkaloid from an equal volume of liquid extract, purified by the method above mentioned, was similarly treated. The following results were obtained:—

	By Weight	By Titration
Experiment 1.—Impure alkaloid	... 0.097	... 0.070
Purified alkaloid	... 0.072	... 0.070
Experiment 2.—Impure alkaloid	... 0.098	... 0.086
Purified alkaloid	... 0.087	... 0.086

The proper equivalent, based upon the means of the molecular weights of emetine and cephaeline, is 0.023939 gramme, or, practically, 0.024 gramme, for each c.c. of decinormal hydrochloric acid.

For the purpose of our experiments several ipecacuanha percolates and fluid extracts were used. The following assay-processes were employed:—(1) The official process; (2) Wilson's alternative process; (3) our proposed process; (4) a modification of No. 3 for rapid working. The details of No. 3 are as follows:—

Five c.c. of the fluid extract is placed in a small porcelain dish 10 drops of diluted sulphuric acid, B.P., added, with 5 c.c. of water, and the mixture evaporated over a water-bath until the volume of liquid is reduced to about 3 c.c. This is run into a separator, the dish carefully rinsed with 10 drops of water and then with 15 c.c. of chloroform, the whole being transferred to the separator. An excess of ammonia is added, and the mixture well shaken and allowed to stand until the chloroform has separated. This is run off, and the agitation and separation repeated with two successive quantities of 5 c.c. of chloroform. The chloroformic solutions are bulked, and the alkaloids extracted by shaking with three successive quantities of 10 c.c. of 1-per-cent. sulphuric acid. The acid-alkaloidal solutions are drawn off in turn and mixed. The alkaloids are finally recovered from this solution by repeating the treatment with ammonia and chloro-

* P.J. 4, viii. p. 3.

† P.J. 4, vii. p. 347.

* P.J. 3, xx. p. 252.

† P.J. 4, viii. p. 99.

form. The solution of the alkaloids in chloroform is then evaporated in a tared dish over a water-bath until all the chloroform has been removed. The weight is taken, and the alkaloidal residue titrated with decinormal HCl and vingtinormal NaOH, as previously described.

(4) Two c.c. of the fluid extract is acidified and evaporated, and the alkaloids extracted with chloroform as described under No. 3. The chloroformic solution of the alkaloids is evaporated to dryness and the residue titrated at once.

The following results were obtained :—

	(1)		(2)		(3)	
	Wt.	Tit.	Wt.	Tit.	Wt.	Tit.
B.P. Process ...	1.92	1.60	1.64	1.26	1.83	1.41
Wilson's „ ...	2.23	1.93	1.85	1.57	1.97	1.64
F. & W. „ ...	2.20	2.02	1.90	1.78	2.04	1.82
Quick „ ...	—	1.97	—	1.74	—	1.80

No. 4 method is proposed as a rapid process for employment in laboratories where economy of time is an object. The whole process can be performed in half an hour, and the results are practically accurate.

In the determination of the alkaloidal value of the wine and vinegar we recommend the following process :—

Fifty c.c. of the sample is placed in a porcelain dish, 10 drops of diluted sulphuric acid is added, and the liquid evaporated to about 5 c.c. It is then transferred to a separator, the dish rinsed with a few drops of water and 10 c.c. of chloroform, and the alkaloids determined as described in the process for the fluid extract.

Several commercial samples of the wine were determined by this method, and the percentage was found to vary between 0.024 and 0.08, the average being 0.054.

The alkaloids from the samples of wine were almost colourless, and the titration-results proved that they are yielded in an almost perfectly pure condition. This is evidently attributable to the fact that the impurity present in the crude alkaloids from the liquid extract, and which is most probably of a resinous nature, is thrown down and filtered out in the process of conversion into wine. The vinegar was not examined; but, as it is prepared by simple dilution of the fluid extract, it is evident that the process employed for the wine is equally applicable to it.

II.

By W. A. H. NAYLOR, F.I.C., and JOHN J. BRYANT.

For some months our attention has been directed to remedying some defects in the official method of assaying ipecacuanha preparations. We have confirmed Wilson's state-



W. A. H. Naylor.



John J. Bryant.

ment that the B.P. process entails loss, and his process is a great improvement upon the official one. We have studied the matter in all its bearings, and have used the processes which we describe below, the results being tabulated so as to show how they compare with each other in accuracy :—

No. 1. *The Lime-process.*—To 5 grammes of slaked lime in a basin, 5 c.c. of liquid extract is added, care being taken to prevent the latter from coming into direct contact with the containing vessel; the measure is rinsed with alcohol, and the rinsings added to the

lime mixture, and the whole dried over a water-bath. The dry residue is next exhausted in a Soxhlet by boiling ether. The ethereal solution is extracted successively with $\frac{1}{2}$ per cent. sulphuric acid, and the latter with ammonia and chloroform. The residue from the chloroformic extractions is dried and weighed.

The object in including the lime-process is to point out the cause of the low results yielded by it. Our experiments show that the loss of alkaloid is due to the action of the lime on the cephaeline, the emetine being uninfluenced by the treatment.

No. 2. *Kieselguhr-process.*—To 5 grammes of kieselguhr freed from every trace of lime placed in a porcelain basin 5 c.c. of the liquid extract is added, and the mixture dried over the water-bath. The dry powder, after transference to a Soxhlet, is then treated throughout by Ransom's ammoniated-chloroform process.

The chief drawbacks to this method are the time and care required for its exact performance.

No. 3 *Process.*—5 c.c. of the liquid extract is placed in a porcelain basin, two drops of diluted sulphuric acid is added and the mixture heated over the water-bath to drive off the spirit. The acid solution is then transferred to a separator together with the small portions of water used for washing the basin, ammonia is added in excess followed by 10 c.c. of chloroform, and agitated. The agitation and separation with chloroform are twice repeated. The chloroformic solutions are mixed and extracted with 10 c.c. of $\frac{1}{2}$ -per-cent. sulphuric acid thrice repeated. The separated acid solutions are united, rendered alkaline with ammonia, and extracted with three successive 10 c.c. of chloroform. The chloroformic solutions are evaporated, and the residue dried, weighed, and titrated with decinormal HCl.

Although the process is not open to the charge of inaccuracy, it has the one serious defect of consuming much time owing to the great difficulty with which the separations take place, even when the separator is immersed in hot water. After giving this process a fair trial and experimenting further, we decided to abandon it and to adopt the following :—

No. 4 *Process.*—10 c.c. of liquid extract is placed in a basin over a warm water-bath until the alcohol is dissipated. The solution is transferred to a 50-c.c. flask, and the basin is washed with small portions at a time of a mixture of 2 c.c. of diluted sulphuric acid and 30 c.c. of water. The solution is filtered, and water passed through the filter until the volume is 50 c.c., of which 25 c.c., representing 5 c.c. of liquid extract, is transferred to the separator with the little water used for washing the measure, and shaken with two successive 10 c.c. of chloroform. The chloroform washings are rejected, the aqueous portion made alkaline with ammonia extracted with three successive 10 c.c. of chloroform, the chloroform extracts evaporated to dryness, weighed, and titrated with decinormal acid.

The chief recommendation is the rapidity with which the assay can be made. Its distinctive feature is the removal of the resinous substances by a rapid and simple method without loss of alkaloid, therefore making possible the quick separation of the chloroformic solutions.

Process	Amount of Liquid Extract taken in c.c.	Weight of Alkaloid Obtained	C.c. of Decinormal HCl Absorbed	Yield of Alkaloid by Titration	Amount of Impurity	Alkaloid in grammes per 100 c.c. of Liquid Extract	
						By Weighing	By Titration
B.P. 1898 ...	20	0.402	14	0.3374	0.0646	2.010	1.687
Wilson ...	20	0.4	13.5	0.32535	0.07465	2.000	1.62675
Lime ...	5	0.088	2.8	0.06748	0.02052	1.76	1.3496
Kieselguhr...	5	0.106	4	0.0964	0.0096	2.12	1.928
No. 3 ...	5	0.114	4.2	0.10122	0.01278	2.28	2.0244
No. 4 ...	5	0.110	4.1	0.09881	0.01119	2.20	1.9782

In the next table the results are given of six samples of liquid extract by the foregoing processes, titration ex-

cepted, and by Wilson's and the Pharmacopœia processes:—

No. of Sample	B.P. 1898 Process	Wilson's Process	Lime Process	Process No. 3	Process No. 4
1 (a)	1.94	2.25	1.28	—	—
(b)	2.0	2.13	1.38	—	—
2 (a)	2.94	3.16	2.2	3.384	—
(b)	2.995	3.11	2.1	3.296	—
3 (a)	1.90	2.053	1.452	2.268	2.273
(b)	1.905	2.014	1.521	2.301	2.289
4 (a)	3.025	3.275	1.64	3.584	3.528
(b)	3.001	3.112	1.484	3.406	3.413
5 (a)	1.886	2.013	1.382	2.304	2.289
(b)	1.950	1.998	1.525	2.288	2.249
6 (a)	1.996	2.135	1.463	2.401	2.368
(b)	1.935	2.104	1.612	2.397	2.349

The figures refer to grammes of alkaloid per 100 c.c.

For the assay of the wine the following adaptation of the previous process is recommended:—100 c.c. is evaporated over the water-bath to 10 c.c., a little kieselguhr stirred in, the mixture transferred to a beaker, and the basin washed with a mixture of 2 c.c. of dilute sulphuric acid and 20 c.c. of water. The solution is then filtered, and water passed through the filter until the volume measures 50 c.c. Of this filtrate 25 c.c. is taken, which represents 50 c.c. of the wine, and the remaining operations are conducted as detailed in process No. 4.

Johore Ipecacuanha.

By JOHN C. UMNEY and RALPH S. SWINTON.

The recent importation of a quantity of ipecacuanha from Johore (Straits Settlements) is, at the moment when the drug is so scarce and of such high market value, of considerable importance. The root is, with little doubt, derived from *Psychotria Ipecacuanha*, the species that yields the Rio or Brazilian root. In characters the root differs but little from that imported from Brazil, except that it was practically free from stem and the annulations were more prominent.

Microscopic examination of the powder of cultivated ipecacuanha imported from Singapore has already been made by Greenish,* who found it to be identical with Brazilian root. In the present instance microscopic examination of the powder showed absolutely no difference as compared with powdered Rio root free as far as possible from stem.

The Editor of THE CHEMIST AND DRUGGIST (May 26, 1888) found in a sample imported from Johore 1.4 per cent. of emetine, whilst Ransom examined a sample of the root cultivated in India, and reported † that it contained 1.7 per cent. of emetine. The researches of Paul and Cownley on the ipecacuanha-alkaloids, and the physiological experiments of Dr. Wild, have made it possible on the one hand, and necessary on the other, to push the investigation further, and ascertain whether the alkaloids contained in the root are the same as in the Brazilian variety, and in what relative proportions they exist. In the Brazilian the proportions are 75 of emetine to 25 of cephaeline, and in Cartagena 45 of emetine and 55 of cephaeline.

We have followed Paul and Cownley's processes in the present investigation. The proportion of total alkaloids was found to be 1.7 per cent. A little difficulty was experienced in arriving at concordant results in the determination of the relative proportions of emetine and cephaeline, but the mean of three experiments is as follows:—

	Per cent.	Percentage proportion
Emetine	1.24	72.94
Cephaeline	.39	22.94
Third alkaloid or other alkaloids	.07	4.12
	1.70	100.00

thus showing that Johore ipecacuanha is practically

identical with Brazilian, except that there is a larger proportion of the third alkaloid if identical with that contained in the Rio ipecacuanha, and the total alkaloids are lower in proportion than the average for Brazilian.

We have noted that the extractive yielded by the Johore root is not so large in amount as from Brazilian, and the precipitate yielded by basic lead-acetate solution in the extractive freed from alcohol is very much greater in the case of the Rio root than the Johore.

There appears to be no reason, however, why this root should not be used in medicine for standard preparations of ipecacuanha.

Assay of Preparations Containing Pilocarpine and the Characters of Pilocarpine Nitrate and Hydrochloride.

By H. A. D. JOWETT, D.Sc.

Our knowledge of the alkaloids of jaborandi is in a very unsatisfactory condition, especially in regard to the topics which form the title of this paper. As regards the assay, it is possible to determine the amount of total alkaloid contained in the leaves or their preparations with a fair degree of accuracy; but this is of little value, for it gives no indication of the amount of pilocarpine contained in the total alkaloid, and it must be assumed that on the pilocarpine alone depends the therapeutic value of the drug.

The nitrate and hydrochloride of pilocarpine are somewhat largely used in medicine, but the characters of these salts as given in Pharmacopœias are very unsatisfactory, and hardly serve to identify the alkaloid, much less to determine purity. The only salt of pilocarpine recognised by the B.P. is the nitrate, of which the following description is given:—

A white crystalline powder, soluble in 8 to 9 parts of cold water, slightly soluble in cold, freely soluble in hot alcohol (90-per-cent.)

The salt generally occurs in distinct crystals, and can always be obtained in this form. A little more definite information should be given as to its solubility, the factors above mentioned for water being incorrect. The test for identity which is given can hardly be considered distinctive and depends on the oxidation of the base by chromic acid and the appearance of the green colour of chrome alum.

The only other proof of identity required is furnished by a physiological test, which could hardly be carried out by the analytical chemist or pharmacist.

The characters and tests for the hydrochloride (which is official in the U.S.P. and German Pharmacopœia) are better than those given for the nitrate in the B.P., but still leave room for improvement. The hydrochloride is described as "white deliquescent crystals, easily soluble in water and alcohol, sparingly soluble in ether or chloroform." As this salt is exceedingly soluble in the two former solvents, the general statement is sufficient. The m.p. is given as 197° C. in the U.S.P., and the usual reactions for alkaloid and the inorganic acidulous radical are required as proof of identity. The freedom from inorganic impurity is ensured by the ignition-test. The chromic-acid colour reaction is given in the U.S.P., but not in the German Pharmacopœia; but both give a test which distinguishes this from most other alkaloids, including associated jaborandi alkaloids—viz, non-formation of a precipitate on the addition of ammonia to an aqueous solution of the salt. A solution of sodium hydrate only gives a precipitate with a concentrated solution of the alkaloidal salt.

Allen* states that the alkaloid gives no reaction with picric acid, but I have found that a yellow precipitate of the picrate is thrown down, which dissolves on warming, then separates out in needles.



* P.J. 3, xxv. 688.

† P.J. 3, xviii. 400.

* "Organic Analysis," vol. iii. pt. iii. p. 37.

Paul and Cownley * have made some important observations with regard to the pilocarpine nitrate and hydrochloride of commerce. They found that commercial specimens of pilocarpine nitrate were far from pure, three samples examined melting at 141.7°, 150.5°, and 167.2° C. respectively; further, the crystallised nitrate obtained by them from different kinds of jaborandi-leaves melted at from 151.5° to 162.7°. According to these chemists a salt described as "pure pilocarpine nitrate" melted at 141.7°, and when recrystallised from alcohol in different fractions gave no considerable alteration in the melting-point. They also examined samples of commercial pilocarpine hydrochloride, and found indications of the presence of more than one alkaloid. They remark that a possible explanation given—viz., that the impurity present was jaborine—requires more definite proof.

Petit and Polonowsky † have examined the salts of pilocarpine, and give the following constants:—

Pilocarpine nitrate	Prisms soluble in 7 parts of water at 18°, in 146 parts alcohol (95-per-cent.) at 18°.
	Melting-point, 177°–178°. $[\alpha]_D^{20} = +82.2^\circ$.
Pilocarpine hydrochloride	Anhydrous prisms, soluble in 0.4 part of water, in 10 parts alcohol at 18°.
	Melting-point, 200°. $[\alpha]_D^{20} = +91^\circ$.

They also state that commercial specimens examined contained an impurity, stated to be pilocarpidine, to as large an extent as 50 per cent. Their results relate to chemically pure products, and it is not always advisable to insist on this degree of purity for chemicals required for medicinal use, owing to the extra expense incurred not being commensurate with the corresponding therapeutic advantage.

In the present communication I give a method for determining the amount of pilocarpine in the total alkaloid, then proof of the identity of pilocarpine from different sources, and finally the characters and tests for pilocarpine nitrate and hydrochloride.

Assay of Preparations containing Pilocarpine—Several methods are available for extracting the total alkaloid from jaborandi or its preparations, and any of these may be used to obtain the mixture of amorphous bases. On obtaining these as a varnish the residue is dissolved in a small quantity of a saturated alcoholic solution of pilocarpine nitrate, and to this is added a strong alcoholic solution of nitric acid (freshly prepared) until the solution is faintly acid. It is set aside to crystallise after the addition of a small crystal of pilocarpine nitrate. It is then allowed to stand for two hours, without concentration, stirred vigorously, and any crystals which have separated are filtered off, drained by the filter-pump, washed with the saturated alcoholic solution of pilocarpine nitrate, dried, and weighed. From the weight of crystalline nitrate thus obtained the percentage of bases in the total alkaloid-yielding crystalline nitrate can be calculated.

It is sufficient in most cases to assume this to be pilocarpine, but if a very accurate determination be required the melting-point and specific rotation of the nitrates should be determined, and from these data can be calculated the amount of pilocarpine present. My experience is that the melting-point is sufficient, and as this is generally above 170°, the calculation can be made on the assumption that the crystalline nitrate consists entirely of pilocarpine. Assuming the other impurity to be pilocarpidine, and the constants given for that salt by Petit and Polonowsky to be correct, the percentage of pilocarpine present could be determined from the specific rotation of the mixed nitrates by the following formula:—

$$p = \frac{100(x - 38.5)}{43.7}$$

when

p = percentage of pilocarpine present in mixture
 x = specific rotatory power of salt examined.

Good results are obtained by this method of assay if as much as 0.5 gramme of total alkaloid be taken. The melting-point also indicates the proportion of pilocarpine present: if above 174° it may be calculated as pure pilocarpine, if 167° to 174° from 80 to 90 per cent. pilocarpine. If the

product melts below 167°, it should be recrystallised from a small quantity of hot absolute alcohol and the weight taken of the crystalline nitrate thus obtained, and proceed with as above. While not claiming absolute accuracy for this method, I do claim that it is more important to know, within limits of even 5 per cent., the amount of pilocarpine in the total alkaloid than to be able to determine the latter factor with great accuracy, since this figure gives us absolutely no information as to the amount of pilocarpine present.

Characters of Pilocarpine Nitrate and Hydrochloride.—

In order to be certain of the identity of pilocarpine nitrate from various sources, I prepared the salt from two varieties of jaborandi-leaves—viz., the true jaborandi and the small-leaved variety, Maranhão jaborandi—and I also purified some pilocarpine nitrate purchased from two manufacturers. I found that, contrary to the statements of Paul and Cownley, and Petit and Polonowsky, the nitrate is easily purified by repeated recrystallisation from strong alcohol.

The proof of the identity of the pilocarpine nitrate prepared from these different sources and of its chemical purity was furnished by the fact that the salt after several recrystallisations from different solvents, and when obtained in different fractions underwent no change in the melting-point or specific rotatory power, and the physical constants of the purified salt from every source were identical. The physical constants of the pure salt were:—

		Petit and Polonowsky
Melting-point	... 178° ...	177–178°
$[\alpha]_D^{20}$	+ 82.9° ...	+ 82.2°
Solubility in water	1 in 6.4 (at 20°) ...	1 in 7 (at 18°)

A further proof of the identity of pilocarpine nitrate as obtained from different sources is furnished by the agreement of the factors obtained by me and those given by Petit and Polonowsky.

I am unable to understand why a sample of pilocarpine nitrate, melting-point 141.7°, when recrystallised from alcohol in different fractions should give no alteration in the melting-point, as I obtained the following results with a commercial specimen melting at 168°, and I have never met with a preparation with a lower melting-point.

Melting-points of pilocarpine nitrate after recrystallisation from alcohol:—

Melting-point of original salt	= 168°
After 1st recrystallisation	= 175°
After 2nd recrystallisation	= 176°
After 3rd recrystallisation	= 176°
After 4th recrystallisation	= 178° and $[\alpha]_D^{20} = +82.94^\circ$

The specimen referred to by Paul and Cownley must have been very impure. I am able to confirm the observations of other chemists that the pilocarpine nitrate of commerce is impure. Two different specimens yielded me by recrystallisation about 83 per cent. of pure pilocarpine nitrate, the factors being (a) m.p. 167° $[\alpha]_D^{20} = +77.88^\circ$, and (b) m.p. 169° $[\alpha]_D^{20} = +79.08^\circ$.

The impurity consisted of a crystalline nitrate of much lower melting-point and specific rotatory power. This would appear to be possibly pilocarpidine nitrate, but I am not in a position at present to state whether this is the case.

Pilocarpine hydrochloride was prepared in the usual way through the base from pure pilocarpine nitrate, and then purified by repeated recrystallisations till the melting-point and specific rotatory power were unchanged by further treatment. The pure salt had the following physical contents:—

Melting-point	= 204–205° ... 200°	} Petit and Polonowsky's figures
$[\alpha]_D^{20}$	= + 91.74° ... + 91°	

I attribute my higher figures to the greater purity of the salt examined, as, though made from pure pilocarpine nitrate, it melted at 202°, but after recrystallisation at 204–205°. The hydrochloride described by Paul and Cownley as melting at 192–196° must have been impure, but there is no reason to suppose that this impurity was different to that found in the nitrate, and stated to be pilocarpidine, as I have found that the nitrate of low melting-point obtained from commercial pilocarpine nitrate yields a hydrochloride melting below 200°.

* *Ph. J.* lvii, pp. 1 and 437.

† *Journ. de Pharmacie*, 1897, pp. 430, 475, and 478.

For pharmacopœial purposes I would suggest the following characters and tests:—

Pilocarpine Hydrochloride.—White crystals, deliquescent in damp air. Soluble in less than its own weight of water, and in 10 parts of absolute alcohol, almost insoluble in ether or chloroform. When the salt, dried at 100°, is heated in a capillary tube it melts at 200° to 204°. The specific rotatory power in aqueous solution should be + 90° to + 92°. On ignition the salt yields no residue (absence of inorganic impurity). A concentrated aqueous solution gives no precipitate on the addition of ammonia-water, and only a few oily drops, which quickly redissolve, on the addition of aqueous solution of sodium or potassium hydrate (distinction from most other alkaloids). Affords the characteristic test for chlorides.

Pilocarpine Nitrate.—White distinct crystals, permanent in the air. Soluble in 6 to 7 parts of water at ordinary temperatures, and in 146 parts of cold alcohol (95-per-cent.), and fairly soluble in boiling alcohol; almost insoluble in ether or chloroform. When heated in a capillary tube the salt melts at 176° to 178°. The specific rotatory power in aqueous solution should be + 81° to + 83°. On ignition the salt yields no residue (absence of inorganic impurity). A concentrated aqueous solution gives no precipitate on the addition of ammonia-water or aqueous solutions of sodium or potassium hydrate (distinction from most other alkaloids). Affords the characteristic tests for nitrate.

These characters and tests would ensure such a product as would seem suitable for medicinal use, but if it be thought desirable that the chemically pure salts should be used, then the constants given for these salts must be used.

The foregoing experiments were carried out in the Wellcome Chemical Research Laboratories, London, E.C.

The Alkaloidal Strength of Commercial Samples of the Official Preparations of Jaborandi.

By E. H. FARR, F.O.S., and R. WRIGHT, F.C.S.,
Pharmaceutical Chemists.

For several years past we have had great difficulty in making standard preparations of jaborandi from commercial samples of the leaves, and it occurred to us that an investigation into the strength of the tincture and liquid extract as found in pharmacy would not only serve to show whether such an experience was common to pharmacists generally, but might also yield results possessing some degree of interest to the members of this Conference. For the purpose of the inquiry twelve samples of each of the official preparations were obtained from various sources, and the results embodied in this note may be taken to represent the average strength of the preparations as found in pharmacy at the present time. The process employed for the determination of the alkaloids was as follows:—

Fifty c.c. of the tincture (or 10 c.c. of the fluid extract) is acidified with dilute sulphuric acid and evaporated over a water-bath to a syrupy consistency, 30 c.c. of 90-per-cent. alcohol added, and the mixture well stirred and allowed to stand for an hour. The liquid portion is then separated by decantation or filtration, the mucilaginous deposit dissolved in a little acidulated water, and the treatment with alcohol repeated. The dish and filter are rinsed with a little alcohol, the filtrates and rinsings bulked and evaporated over a water-bath, water being added from time to time until all alcohol has been removed. The residual liquor is transferred to a separator, the dish rinsed with a few drops of water, and the rinsings run into a separator. The liquor in the separator is rendered alkaline with ammonia, and the alkaloids shaken out with two successive 15 c.c. of chloroform. In order to obtain the alkaloids in a pure condition they are withdrawn from the chloroformic solution by shaking with acidulated water, 25 c.c. of distilled water being mixed with 2 c.c. of seminormal sulphuric acid, and the mixture used in three portions. The mixed acid-alkaloidal solutions are then rendered alkaline, and the alkaloids shaken out with chloroform as before. The chloroform is removed by evaporation over a water-bath, and the alkaloids dried and weighed.

The gravimetric results were in each case checked by titration, the alkaloids being dissolved in a little alcohol, a calculated excess of decinormal HCl with some distilled water added, and the solution brought back with vingtinormal NaOH. Cochineal was used as the indicator. The results of the analyses are shown on the accompanying table, which shows amount of alkaloids, in grammes,

from 100 c.c. of the tincture and liquid extract of jaborandi:—

No.	Tincture	Liquid Extract
1	0.025	0.240
2	0.032	0.090
3	0.024	0.190
4	0.050	0.210
5	0.084	0.090
6	0.020	0.160
7	0.022	0.120
8	0.012	0.090
9	0.044	0.190
10	0.064	0.030
11	0.040	0.170
12	0.018	0.210
Average	0.036	0.150

Before proceeding to indicate the principal conclusion to be drawn from these results, it will be well to consider for the moment the question as to what ought to be the approximate alkaloidal standard for a tincture or a fluid extract, having in view the doses given in the British Pharmacopœia. Our calculations are based upon the average dose of the salt of pilocarpine, which may be taken at from $\frac{1}{16}$ to $\frac{1}{8}$ gr. (0.0032 to 0.032 gramme). For a tincture having a fixed dose of from $\frac{1}{2}$ to 1 fl. dr. (18 to 3.6 c.c.) the alkaloidal standard should be about 0.15 per cent. (0.15 gramme in 100 c.c.). By a similar method of calculation the liquid extract should contain roughly, from 0.8 to 1 per cent. alkaloids. Looking at the question from this standpoint it is evident that the galenical preparations of the drug found in retail pharmacies at the present time are very deficient in strength, only containing about one-fifth the proportion of active constituents which, judging from the official doses, they are supposed to contain. For this condition of things we do not think that pharmacists can be held altogether responsible. In the year 1891, in connection with our work on the pharmacy of jaborandi, we prepared a series of eleven tinctures by the official process from samples of the leaves then obtainable through the regular sources of supply. Two of these yielded practically 0.105 per cent. of alkaloids, eight gave over 0.1 per cent., and the average for the whole series was 0.105 per cent. At the present time, according to our personal experience, it is practically impossible to obtain a sample of the drug which will give a 1-in-5 tincture having an alkaloidal content of 0.05 per cent.

What is the explanation of this state of affairs? The most feasible one seems to be that for some reason or other the true jaborandi-leaves (or at any rate leaves of the best quality) are being withdrawn from the drug-markets, and so prevented from coming into the hands of pharmacists at all. It may be that manufacturers of pilocarpine salts buy up all samples of leaves rich in alkaloids, for, as all of us know to our cost, the present price of the salts is quite prohibitive. *Pari passu* with this dearth of the genuine article, quite a number of substitutes have been thrown upon the drug-markets. Some of these have been described and figured by Holmes, Greenish, and others, and Paul and Cownley have shown that nearly all are valueless as substitutes for the original drug.

The consideration of this subject leads to the pertinent question, Are the official leaves obtainable; and, if so, where?

Estimation of Diabetic Glucose.

PICRIC AND FEHLING METHODS COMPARED.

By R. H. PARKER, F.C.S.

Of the many available methods for the quantitative estimation of diabetic glucose, the picric and Fehling tests offer most advantages to the busy pharmacist, particularly to such as cannot conveniently set apart counter-space for the exclusive use of special apparatus.

The *Picric Method* is rapid, and with close attention to manipulative detail constant results are easily obtained. The necessity, however, of removing creatinine and other

"interfering substances," in order to deal with small percentages of sugar, involves the expenditure of too much time for clinical purposes.

The Fehling Method, when dealing with high percentages, is perfect, but if the sugar falls below 2 per cent. the cuprous oxide usually refuses to subside, so that rapid reading is impossible. Gerrard's "cyano-cupric" and Pavy's



R. F. Parker

"ammonio-cupric" modifications dispose of this difficulty, but are less convenient, and for very small percentages their precision is marred by the colour-reactions of normal constituents. Noting the beautiful precision with which the Fehling test invariably reacts when dealing with high percentages, it occurred to me that the same result might be realised with specimens under 2 per cent. by adding a known quantity of glucose

before estimating. This proved eminently satisfactory, an aqueous solution of commercial glucose of known strength (from 6 to 8 per cent.) being used for the purpose; but as diabetic glucose reacts with Fehling's solution much more sharply than commercial glucose, even better results attend the use of a diabetic urine of similar sugar-strength, preserved with 1 per cent. of formalin. On adding this to an equal volume of a sample giving the "non-subsiding" yellow cuprous oxide, the mixture may be estimated immediately, the CuO then coming down as a dense, rapidly subsiding red precipitate.

Having observed occasional discrepancies between the Fehling and picric estimations, I have for a considerable period estimated samples by both methods, and in the following table the results are recorded arranged in sequence according to the amount of sugar indicated by Fehling. The Fehling's solution was taken as equivalent to 0.5 per cent. of glucose, and the value of the picric standard colour was fixed by the results obtained with the high-percentage urines, and found to equal 0.059 per cent.; taking this as unity, I have usually recorded the "picric indication" by a numeral indicating multiples of this unit.

TABLE 1.—Fehling and Picric Results Compared.

Sample	Glucose Found, F. method	Glucose Found, P. method	Ratio of Results, F. & P.	Sp. gr. of Sample
1	0.2 per cent.	0.33 per cent.	1:1.65	1.021
2	0.36 "	0.55 "	1:1.53	1.027
3	0.4 "	0.52 "	1:1.30	1.013
4	0.4 "	0.50 "	1:1.25	1.023
5	0.42 "	0.59 "	1:1.40	1.025
6	0.54 "	0.57 "	1:1.06	1.011
7	0.59 "	0.79 "	1:1.34	1.024
8	0.6 "	0.65 "	1:1.08	1.016
9	0.7 "	1.00 "	1:1.43	1.030
10	0.8 "	0.94 "	1:1.18	1.024
11	0.84 "	0.94 "	1:1.12	1.025
12	1.0 "	1.09 "	1:1.09	1.024
13	1.2 "	1.2 "	1:1.00	1.025
14	1.2 "	1.2 "	1:1.00	1.025
15	1.8 "	1.8 "	1:1.00	1.024
16	2.05 "	2.1 "	—	1.020
17	2.1 "	2.1 "	—	1.027
18	2.1 "	2.1 "	—	1.014
19	2.2 "	2.2 "	—	1.027
20	2.5 "	2.1 "	—	1.030
21	2.55 "	2.6 "	—	1.014
22	2.6 "	2.6 "	—	1.028
23	2.7 "	2.6 "	—	1.024
24	2.7 "	2.7 "	—	1.033
25	2.9 "	2.8 "	—	1.020
26	3.6 "	3.5 "	—	1.025
27	4.2 "	4.2 "	—	1.036
28	5.5 "	5.9 "	—	1.041
29	6.0 "	6.6 "	—	1.033
30	6.6 "	6.6 "	—	1.034
31	8.8 "	8.9 "	—	1.041
32	8.8 "	8.8 "	—	1.043

It will be seen from this table that the estimations are always in close agreement when the sugar is over 1 per cent.; below this the divergence is considerable, increasing as the

sugar diminishes, and being usually intensified by increase of sp. gr. Evidently the "interfering substances" have a much more intense reducing-power upon picric acid than upon Fehling's solution, and the discrepant results are simply conditioned by the quantitative position which the sugar holds in the total solids.

Further questions arise:—(1) Is there a natural limit to the possible percentage of "interfering substances"? (2) How can "interfering substances" be most readily distinguished from glucose? On this quest I have studied the behaviour of the two tests as applied to non-diabetic samples, and to diabetic samples having a sugar-indication below 0.5 per cent. In every case the sample was first treated with 25 per cent. of liquor potassæ, and filtered (to remove phosphates, &c.). The picric results are recorded in terms of the dilutions required to equal the colour-standard (unity being equivalent to 0.059 per cent. glucose). The Fehling results record the behaviour of 1.25 volume of alkalised urine dropped slowly into 1 volume of boiling Fehling's solution, noting any change in colour and the lapse of time after which opacity (if any) occurs.

Table 2 comprises all diabetic samples of low sugar percentage, while in Table 3 are collected all non-diabetic samples, showing high picric-indication. OP. = opaque; TR = translucent, opaque by reflected, bright by transmitted, light; N.D. = next day.

TABLE 2.—Diabetic Samples with Low Picric-indication.

—	Sp. Gr.	Picric Ind. 1 = 0.059 Glucose	Behaviour with Fehling's Solution
1	1.017	1.5	No opacity; N.D. upper portion more blue than lower
2	1.011	1.8	No opacity; N.D. bottom third opaque
3	1.018	2	No opacity; N.D. bottom half translucent green
4	1.018	2.5	No opacity; N.D. no opacity, upper portion more blue
5	1.025	3	No opacity; N.D. no opacity, upper portion more blue
6	1.025	3	Brilliant green, no opacity
7	1.016	3	No opacity; N.D. trace ochre ppt. and bottom TR.
8	1.024	4	Brilliant green, no opacity
9	1.020	4	TR. in 1 hour, OP. in 3 hours
10	1.020	4	TR. in 1 hour, OP. in 3 hours
11	1.015	4	OP. in 30 seconds
12	1.027	5	TR. in 2 hours
13	1.025	5	OP. in 1 minute
14	1.018	5	TR. in 2 minutes, OP. in 5 minutes
15	1.022	5	OP. in 30 seconds
16	1.021	5.5	OP. in 1 minute
17	1.024	6	OP. in 2 minutes
18	1.019	6	OP. on completion of ebullition
19	1.026	8	OP. in 20 seconds
20	1.025	8	Brilliant green, OP. in 30 seconds
21	1.018	8	OP. before completion of ebullition; half-strength — OP. at end of boiling; quarter-strength — OP. in 1½ minute

TABLE 3.—Non-diabetic Samples with High Picric-indication.

—	Sp. Gr.	Picric Ind. 1 = .059 Glucose.	Behaviour with Fehling's Solution
1	1.026	3	Brilliant, slightly green, no opacity
2	1.025	4	Brilliant green, no opacity
3	1.028	4	Brilliant green, no opacity
4	1.030	4.5	Brilliant olive green, no opacity
5	1.025	4.5	Brilliant green, no opacity
6	1.031	5	Scarcely altered
7	1.024	6	Brilliant olive green, no opacity
8	1.015	6	Very dark green, no opacity
9	1.028	6	Very dark green, no opacity
10	1.029	6	Brilliant green; N.D. bottom fourth TR.; patient overfed and gouty
11	1.025	7.5	Brilliant greenish brown; N.D. very slightly TR. (dark brown sample, much salol derivatives)

The difference between these two tables is very marked; in diabetic samples (Table 2) the peculiar translucency or opacity appears sooner or later in almost every case, even with a picric-indication as low as 1.8. On the other hand, in non-diabetic samples (Table 3) no opacity whatever occurs. Moreover, it may be noted in Table 3 that a picric-indication of 6 (equal to 0.35 per cent. glucose) appears to be the highest limit for the occurrence of "interfering substances."

Attention was next directed to the possibility of utilising the first appearance of opacity as a fixed point for quantitative observations of minute traces of glucose. In every case the sample was mixed with one-fourth its volume of liquor potassæ, filtered, and 1.25 volume of filtrate dropped slowly into 1 volume of boiling Fehling's solution. It was found (1) that highly saccharine urine diluted with water never gives opacity with Fehling's solution, the CuO being always produced as a dense red precipitate; even 0.05 per cent. can readily be detected by the spot of red precipitate at the bottom of the test-tube; and (2) that highly saccharine urine diluted with normal urine gives a dense red precipitate down to 2 per cent.; below this the precipitate subsides less rapidly; below 1.5 per cent. the yellow-ochre opacity appears during ebullition, and the CuO is practically non-subsiding; at 0.4 per cent. the opacity still appears before ebullition is completed; at 0.3 per cent. just at the end of ebullition; at about 0.2 per cent. the solution remains unaltered blue during ebullition, but about a minute afterwards it changes rapidly to deep transparent green, then translucent, and finally opaque; at 0.1 per cent. the opacity appears five or ten minutes after ebullition; and at 0.05 per cent. no observable change takes place for some hours.

The first appearance of opacity is somewhat deferred by the normal constituents of urine. The following series of comparative experiments will illustrate this. A highly saccharine urine (containing 8.8 per cent. glucose) was diluted with normal urine to contain 0.5 per cent. This was further diluted to lower percentage (a) with water and (b) with normal urine. The behaviour of each with Fehling's solution was then noted:—

0.4 per cent.	(a) Opaque before end of boiling.
	(b) " " " "
0.3 per cent.	(a) Opaque before end of boiling.
	(b) Opaque just at end of boiling.
	(a) Opaque just at end of boiling.
0.2 per cent.	(b) Unaltered for two minutes, then translucent green for several hours.
	(a) Opaque after twenty seconds.
0.1 per cent.	(b) Unaltered for six minutes, then translucent green for several hours.
	(a) Brilliant blue, no opacity, red deposit visible in a few minutes.
0.05 per cent.	(b) Brilliant blue, no opacity, no deposit.

Conclusions.—1. The production of opacity in Fehling's solution by alkalisied urine is characteristic of glucose.

2. "Interfering substances" do not produce this opacity, and rarely occur in greater quantity than a picric-indication of 0.35 per cent. glucose.

3. When the picric-indication falls below 0.4 per cent. the actual amount of glucose present (if any) may be approximately ascertained by noting the point at which opacity appears, diluting, if necessary, until the Fehling remains unaltered during ebullition and becomes opaque about a minute later. This dilution will be approximately 0.2 per cent.; a further halving of the strength should leave Fehling unaltered blue for five or ten minutes.

4. Samples of urine giving the non-subsiding yellow cuprous oxide may be rapidly estimated with Fehling's solution, if previously mixed with an equal volume of glucose solution of known strength (6 or 8 per cent.).

The Strength of Capsules of Blaud's Pill of Commerce.

By C. E. STUART, B.Sc.

The enormous amount of labour and brains that has been bestowed upon the details of the formula for Blaud's pill of carbonate of iron, culminating in the production of an official formula, has practically exhausted the field of the chemistry and pharmacy of the subject. Capsules of Blaud's

pill, however—that is, capsules containing the equivalent of one or more Blaud's pills—being of more recent introduction, have still a sphere of interest attaching to them, and are still—as my figures given below will show—somewhat of a problem to the pharmacist.

It is a comparatively easy matter to make a large capsule containing 3 gr. of ferrous carbonate, which is the strength most in demand; but to make a small capsule of the same strength requires much care in the preparation of a concentrated soft mass with which to fill the capsule-shell.

I have had occasion at intervals during the past year to examine a number of samples of Blaud's pill capsules of various makes, as a rule freshly prepared, and the results obtained seem to me of sufficient interest to justify me in laying them before the Conference as a contribution to the thirty-fifth subject specified in the Blue List.

In the following table I give the amount of ferrous carbonate found in an average of from three to eight capsules, and in some cases the average weights of the contents of the capsules. In each case the iron salt was found to be rendered semifluid by admixture with an oily body—liquid paraffin in some cases, probably so in all.

The contents of the capsules fall according to their method of manufacture into the three classes A, B, C. Each number represents a separate make or batch of capsules.

A. Capsules containing saccharated ferrous carbonate:—

No.	Average Ferrous Carbonate in Each in Grains	Average Weight of Contents in Grains.	Remarks
1	0.07	—	—
2	0.92	4.01	Total iron calculated as FeCO_3 0.46 gr.

B. Capsules containing ferrous carbonate badly washed and excess of alkaline carbonate:—

3	0.46	—	—
4	0.89	—	—
5	2.59	—	—
6	0.50	8.0	Strong effervescence, with acid
6a	0.45	8.0	As 6, six weeks after
7	0.70	4.77	—

C. Capsules containing well-washed ferrous carbonate:—

8	3.26	6.2	—
9	3.83	6.6	—

It will be seen that Nos. 8 and 9 show that the problem of a small and active Blaud's pill capsule is not insoluble. The remaining numbers reveal the fact that the required standard is not always attained. In No. 1 it is evident that the maker had a very curious notion of what the theoretical iron contents of a Blaud's pill capsule should be, for the total iron calculated as ferrous carbonate in each capsule is only 0.46 gr., and the actual amount of ferrous salt is practically nil.

No. 2 was labelled simply Blaud's pill capsules; all the others were stated to contain the equivalent of three Blaud's pills.

The method of estimation was to weigh the capsules, cut them open under ether, squeeze out the contents, and remove and weigh the rapidly dried shells, giving contents by difference. A little dilute sulphuric acid (or phosphoric acid with those containing sugar) was then poured into the dish, and the oily mass rapidly disintegrated and dissolved. Standard bichromate solution was run in without removing the ether, and the estimation conducted in the usual way.



Three Natural Rubber-substitutes.

By DAVID HOOPER, F.C.S., F.L.S.

Three elastic gums have been collected for the Department of Economic Products of the Government of India, and specimens of two of them were forwarded by Dr. Geo. Watt, C.I.E., to the author for examination. The products are peculiar to India. The first specimen was obtained from the stem of the Banian (*Ficus bengalensis*), which is frequently met with on the plains. The sister tree, *Ficus elastica*, affords the indiarubber of Assam and Burma. The latter is the only species of the same genus indigenous to India and Malaya which is used for producing commercial rubber. The sample of Banian-tree gum was suspected to have been used for mixing with Assam rubber. It was a tough dirty-white substance, with a sourish odour. It



David Hooper

sank in water. It was soluble, without previously swelling, in ether, chloroform, and bisulphide of carbon, which distinguished it from the rubbers of *Ficus elastica* and *Hevea brasiliensis*. The crude rubber yielded, on analysis, the following results:—

Water	...	...	...	4.06
Resins	...	...	...	65.24
Caoutchouc	...	...	...	19.82
Aqueous extract	...	...	...	3.64
Ash	...	...	...	2.06
Dross, &c., undetermined	...	...	...	5.18

100.00

The resins (obtained by boiling with 90-per-cent. alcohol) consisted of alban and fluavil in nearly equal proportions; the former occurring in white crystals melting at 175° C. The latter was amorphous and yellow, and softened at 50°. The purified caoutchouc was brownish in colour, and was feebly elastic owing to the large proportion of resins.

The second sample was obtained from two common wild plants, *Calotropis gigantea* and *C. procera*, known in the vernacular as *Madar*. The latex of these species of *Calotropis* has long been known to yield a form of gutta-percha. Dr. Riddell, of the Nizam's army, pointed this out in 1852, and it was corroborated by Professor T. Redwood in the year following. The testing of the electrical properties of the gum showed that it was a bad insulator, and unsuited for cable-making purposes. Dr. C. J. H. Warden, of Calcutta, in 1885 obtained from the bark of the *madar*-plant a white crystalline resin (*madar-alban*), a yellow resin (*madar-fluavil*), black and bitter resins, and a considerable proportion of caoutchouc, the proportions being as follows:—

Madar-alban	...	...	...	12.66
Madar-fluavil	...	...	...	48.86
Black acid resin	...	...	...	19.72
Caoutchouc	...	...	...	16.92
Yellow bitter resin	...	...	...	1.84

100.00

Last March a sample of the milky juice, freshly obtained from Bengal plants, was examined. It was a milky-white liquid with a strong nauseous odour, and sp. gr. 1.0416 at 15° C. It was miscible with water, but coagulated on boiling, and was precipitated by rectified spirit and solutions of ferric chloride and mercuric chloride. After boiling and washing, the juice yielded 18 per cent. of solid matter. The freshly separated and washed gutta was white, tough, and feebly ductile in the cold. By repeated boilings in 90-per-cent. alcohol, 62 per cent. of resins was removed, consisting of *madar-alban*, *madar-fluavil*, and 25.54 per cent. of insoluble gum was left. This gum was soft, light brown in colour, and slightly elastic in the cold. The Director-General of Telegraphs at Cairo recently experimented with caloptus-juice, and found that it contained 40 per cent. of pure gutta. On testing that substance he found that the molecular arrangement was not the same as that of good gutta-percha. There is no doubt that the resins which are intimately associated with caoutchouc play an important physiological part in its formation; and when the constitution

of these bodies is better known, those substances which at present are looked upon as by-products may be chemically converted into useful compounds with highly elastic properties.

The third substance put forward as a rubber-substitute is the coagulum of the milky juice of *Eccocaria Agallocha*, Linn. The tree inhabits the tidal forests of India and Burma, and the sap which exudes from the bark is said to be poisonous. The juice is very acrid, and causes intense pain to the woodcutters who by accident happen to get any in their eyes, hence it is known as the "Blinding Tree." A tree supposed to be of the same species is known in Travancore as the "Tiger's Milk Tree," as the juice is said to blister the skin. During a tour made in the district of the Sunderbans, Bengal, I collected a small supply of the milky juice. The tree in that district is largely cut for fuel, and sold to merchants in Calcutta. It is genuinely dreaded by the woodcutters on account of the irritating properties of its juice, which flows freely at certain times of the year, and is known to yield a kind of rubber. The juice has an acid reaction and an odour of sour milk. It is freely miscible with water, but coagulates below the boiling-point, and is also precipitated by spirit. The sp. gr. at 15° C. is 1.0718. The constituents are—

Water	...	...	...	61.94
Resin (fluavil)	...	...	...	28.85
Soluble in water	...	...	...	1.76
Albumin soluble	...	...	...	3.40
Albumin insoluble	...	...	...	4.05

100.00

The resin, which is soluble in alcohol, ether, chloroform, and bisulphide of carbon, is a clear amber-coloured body, softening at 45° C. and fluid at 55°; it is unaffected by potash solution and the dilute mineral acids. It burns with a smoky flame, giving off the odour of caoutchouc, but there is nothing in the substance related to caoutchouc. An analysis of the juice of *Eccocaria Dallachyana*, Benth., a native of Australia, recently made by Mr. J. C. Brünnich, and published in the *Queensland Agricultural Journal*, showed the composition to be similar in some points to the Indian species. The irritating properties of this third juice unfit it for commercial purposes.

Oil of Cardamoms.

By E. J. PARRY, B.Sc., F.I.C.

The chemistry of oil of cardamoms is in a very hazy condition, owing to the fact that those who have reported on the subject rarely state what they mean by "cardamoms." The most recent figures for the oil are those given by Schimmel in the *Report* for April, 1897, where it is stated that oil of cardamoms (Ceylon) has a sp. gr. 0.895 to 0.910, and an optical rotation of +12° to +13°. Oil of Malabar cardamoms is described in the *Report* for October, 1897, as being much higher in price, and therefore unable to compete with the commercial oil. The seeds are described as being difficult to obtain, and the oil as having a sp. gr. 0.943, and an optical rotation of +34° 52'. Haensel in his 1896 report, in commenting upon a cardamom cultivated in the Cameroon country, contrasts the physical properties of the oil from it with that of Malabar cardamoms, thus:—



E. J. Parry

	Malabar	Cameroon
Sp. gr. at 15° C. ...	0.9338	0.9071
Opt. rot. in 100mm. ...	+26.0	-23.5
Refract. no. at 25° C. ...	54.1	62.5
Index ref. at 25° C. ...	1.4612	1.4675
Iodine no. ...	123.7	152.1

"One volume of Malabar cardamom oil," he adds, "is not quite soluble in 45 volumes of 60-per-cent. alcohol, and one volume of Cameroon cardamom oil is not quite clearly soluble in 250 volumes of 60-per-cent. alcohol."

These expressions of opinion serve to show that distillers take the oil of Malabar cardamoms as their standard, but it is not uncharitable to suppose that the more abundant and, on the whole, cheaper Mysore variety is used for distillation-purposes. Anyway, my experience with the commercial oil did not fit in with either of these records, and I wished to satisfy myself as to the relative differences, if any, between oil distilled from Malabar cardamoms and that from Mysore. I, of course, refer to these varieties as cultivated in Ceylon, which almost exclusively come to Europe, the only direct imports from India being a portion of Malabar and a fair amount of Mangalore cardamoms, which are used, I am informed, as a spice for special purposes.

Ceylon-Malabar cardamoms and Ceylon-Mysore cardamoms come into the market as the whole fruit, but large quantities of the seed freed from the pericarps are also imported and sold. Whether the latter are bought by distillers or not is a question which did not come within the present inquiry, which had solely for its object determination of the properties of the two oils, and identity was best ensured by purchasing the entire fruit. These were obtained from London drug-brokers who were able to positively guarantee the same. The seeds were distilled for me by Messrs. Evans, Sons & Co., of Liverpool, whose courtesy I have to acknowledge.

The Ceylon-Malabar seeds yielded 1.3 per cent of oil, and the Ceylon-Mysore 2.6 per cent. Both were bright yellow liquids, whose odours were scarcely distinguishable. The sp. grs. and optical rotations were as follows:—

	Sp. Gr. at 15.5°	Optical Rotation at 16° (100-mm. Tube)
Oil of Malabar cardamoms ..	0.9418	+40° 41'
Oil of Mysore cardamoms ...	0.9418	+46° 39'

These figures are in fair agreement with those given for Malabar oil, but in no way resemble those quoted by Schimmel for Ceylon oil, which I do not at all understand.

The oils were soluble with a slight opacity in 40 to 45 volumes of 60-per-cent. alcohol, agreeing with Haensel's oil, which, however, has a much lower rotation.

I find little difference between the two oils. On distillation at ordinary pressure the oil, which is very rich in esters, in both cases decomposes partially, and a considerable quantity of free acid distils over. According to Weber (*Annalen*, 238, 89), formic and acetic acids are found in the distillate. Acetic acid is undoubtedly the chief acid constituent of the esters, but I am unable to confirm the presence of formic acid. If it is present, it is only in faint traces. On distillation under reduced pressure the earlier fractions (the boiling-point rises gradually until 50 per cent. has distilled over) contain cineol, but only to the extent of 5 to 10 per cent. of the oil. This figure is the result of an approximate estimation by means of phosphoric acid. The earlier fractions also contained one or more terpenes, amongst which I identified limonene. Weber states that terpinene is also present, but I was unable to identify this hydrocarbon, nor could Schimmel find it in Malabar oil; and as it easily forms a well-defined nitrite when present, it cannot exist in an appreciable quantity. A small quantity of terpineol is present in both oils, and is easily identified by its phenyl urethane. Schimmel states that it is an optically active modification, but I had not enough oil to examine this. The terpineol comes over with the fraction obtained at 160°–170° C. at 18 mm. The nature of the alcoholic constituent of the greater part of the esters requires further elucidation.

From the economic point of view it will be seen that Ceylon-Mysore cardamoms are preferable to the Ceylon-Malabars for distillation-purposes, as they give the larger yield.

I have to express my indebtedness to the Editor of THE CHEMIST AND DRUGGIST for his assistance in regard to the

commerce of cardamoms, a subject which is most unsatisfactorily treated in works on materia medica.

Notes on Terebene, P.B.

By LEWIS OUGH, F.C.S., F.L.S., Pharmaceutical Chemist.

In attempting to answer the query in the Blue List, "To what extent do commercial specimens of terebene correspond with the characters and tests of the 1898 Pharmacopœia?" I have thought that as this article is now in the British Pharmacopœia an examination of commercial specimens will not be devoid of interest, especially as several English makers assert that it is practically impossible to obtain an article that will agree in all particulars with the official requirements. The requirements of the British Pharmacopœia and those of the United States are not quite identical, but almost so. Power and Kleber, in a research undertaken for the U.S.P. Committee, state that the sp. gr. of terebene is 0.855 at 15° C., and that the boiling-point is 170° to 185° C. (338° to 365° F.). That it "resembles oil of turpentine in its chemical properties" is not correct. Upon the basis of their investigations the following amended text was drawn up by Power, which will doubtless be adopted in the forthcoming edition:—



Terebene.—An optically inactive liquid obtained by the action of concentrated sulphuric acid on oil of turpentine and subsequent rectification with steam. It consists chiefly of the hydrocarbons dipentene and terpinene, with some cymol and camphene.

Terebene should be kept in well-stoppered bottles in a cool place protected from light.

A colourless, thin liquid, having an agreeable thyme-like odour and an aromatic taste.

Sp. gr. about 0.855 at 15° C. (59° F.).

Only slightly soluble in water, but soluble in three times its volume of alcohol, and in an equal volume of glacial acetic acid or of carbon disulphide.

It boils between 170° and 185° C. (338° and 365° F.).

On exposure to light and air terebene gradually becomes resinified, and acquires a yellowish colour and acid reaction.

Terebene should possess its characteristic, agreeable odour, should not redden moistened blue litmus-paper (absence of acids), and should be completely inactive towards polarised light (absence of unaltered oil of turpentine).

If about 10 c.c. of terebene be evaporated in a capsule on a water-bath, not more than a very slight residue should be left (absence of more than traces of resinous matters).

Source of Samples.—With the exception of two, which were of German origin, all the specimens which I have examined were obtained from English manufacturers of the highest reputation, and in some instances the makers have furnished me with a few remarks concerning the article.

The makers of No. 1 say: "We regret that we have no terebene that will answer all the requirements of the Pharmacopœia, neither do we think such an article is procurable on the market; the sample sent approaches as near as possible to the characters and tests of the P.B. 1898."

Sample No. 3 was about five months old when tested, and "was made by the action of 5 per cent. by weight of sulphuric acid on the turpentine."

The manufacturers of No. 4 remark: "We do not polymerise terebene to the extent of its being optically inactive. The demand for the P.B. article with us is comparatively small, and we do not make it."

With regard to Nos. 5 and 6 I am informed: "This article varies so much that it is almost impossible to say that any one sample is typical of our manufacture. Both samples were made in exactly the same way from American turpentine, one of which (No. 5) is nearly P.B.; the other (No. 6) being different in several particulars. The variation appears to be caused by some unexplained effect of age on the turpentine from which the terebene is made, and we are still endeavouring to find a key to the problem."

Sample No. 7 was labelled "P.B. 1898," and No. 8 "Optically inactive." The last sample of the series, No. 12, "was obtained by acting on the turpentine with 5 per cent. by volume of sulphuric acid," and had only been made two

days when examined. The following tables give the results of my analyses:—

Table 1.

Sample	Sp. Gr.	Origin	Colour	Action on Litmus
1	0.868	English	Slightly yellow	Neutral
2	0.866	English	Distinctly yellow	Neutral
3	0.876	English	Colourless	Neutral
4	0.864	English	Distinctly yellow	Neutral
5	0.858	English	Slightly yellow	Neutral
6	0.869	English	Slightly coloured	Slightly acid
7	0.865	German	Distinctly yellow	Neutral
8	0.866	German	Slightly coloured	Slightly alkaline
9	0.862	English	Slightly coloured	Neutral
10	0.863	English	Slightly coloured	Neutral
11	0.864	English	Slightly coloured	Neutral
12	0.861	English	Colourless	Slightly alkaline

The sp. grs. were taken at 60° F. by means of the balance, and it will be noticed that samples 2, 4, 7, 8, 9, 10, and 11 are, in this particular, within the limits of the official requirements.

Table 2

Sample	Boiling between	Amount Distilling below 329° F.	Percentage of Residue	Watts Colour-test
1	320 and 360° F.	12 per cent.	1.3	7 minutes
2	300 " 340 "	62.5 " "	1.6	9 "
3	314 " 344 "	25 " "	1.9	50 "
4	318 " 348 "	62 " "	2.3	4 "
5	329 " 356 "	none	1.9	14 "
6	316 " 364 "	45 per cent.	1.0	6 "
7	326 " 346 "	4 " "	1.3	4 "
8	321 " 344 "	20 " "	1.3	8 "
9	325 " 361 "	15 " "	1.2	6 "
10	300 " 340 "	62.5 " "	.5	5 "
11	326 " 362 "	9 " "	.8	8 "
12	315 " 353 "	75 " "	.3	3 hours

From the above figures it will be seen that only five samples (Nos. 1, 5, 7, 9, 11) can be looked upon as fulfilling the tests with regard to the boiling-limits and the amounts distilling below 329° F. With regard to the residues, Nos. 7 and 10 were of a dark-brown colour, the remainder being of a light-amber tint.

Colour test (Watts, 1892) gives the following test for the freshness of this article:—

Fifteen minims of terebene are introduced into a stoppered bottle containing 1 oz. of a cooled mixture of 2½ gr. of iodide of potassium with 8 gr. of compound powder of tragacanth and 1 oz. of boiling water. Old terebene will colour the liquid blue within an hour, whilst the fresh article will cause no change in twenty-four hours.

This test has been applied to the series of samples, and the results are given in the above table; but a distinctly

Table 3.

Sample	Solubility in Alcohol 90-per-cent.	Solubility in Pure Ether 0.720	Solubility in Methylated Ether 0.717	Optical Rotation
1	1 in 5.5	1 in 10	1 in 2.5	-1.0"
2	1 " 5	1 " 10	1 " 2.5	+4.30"
3	1 " 5	1 " 10	1 " 2.5	+5.45"
4	1 " 5.5	1 " 10.5	1 " 1.5	+1.30"
5	1 " 5	1 " 10	1 " 1.5	Inactive
6	1 " 4.75	1 " 11	1 " 1.6	-1.0"
7	1 " 5	1 " 10	1 " 2	+0.45"
8	1 " 4.75	1 " 11	1 " 1.4	Inactive
9	1 " 4.9	1 " 16.6	1 " 5	Inactive
10	1 " 5	1 " 13	1 " 2.3	+4.0"
11	1 " 5	1 " 20	1 " 1.6	+0.25"
12	1 " 6	1 " 16.6	1 " 2.5	+3.30"

blue colour was obtained in three hours with the sample No. 12, which was only two days old, and the specimen that

had been made five months (No. 3) yielded the same result within fifty minutes. The remainder ranged from four to fourteen minutes, so that this test cannot with any degree of certainty be relied upon.

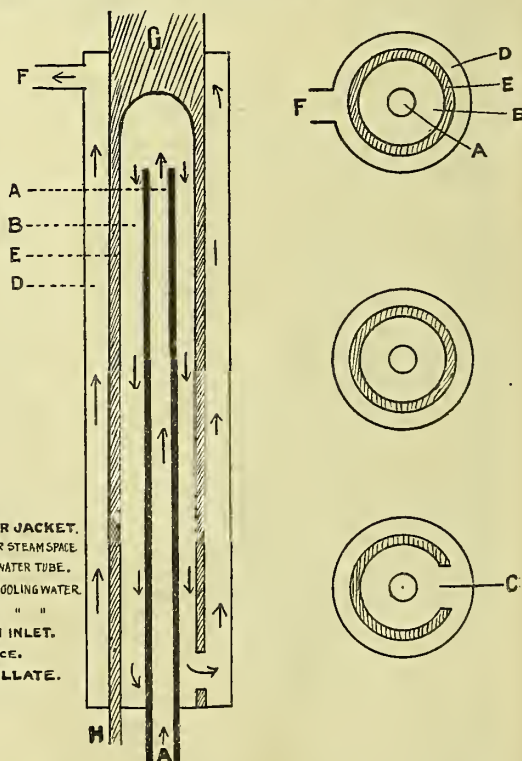
Solubility.—According to Squire's "Companion" terebene is stated to be soluble 1 in 6½ of alcohol 90-per-cent. and 1 in 3½ of ether.

Optical Rotation.—Tested in the ordinary way by the polarimeter, with a column of the liquid 1 decimetre in length, the above varied results were obtained, only three samples (Nos. 5, 8, 9) being optically inactive, the others ranging from -1.0" to +5.45". Sample No. 6 is peculiar in this respect, for, as previously stated, the makers of this specimen informed me it was made from American turpentine; therefore I am quite at a loss to understand why it should have a levogyrate action on polarised light. The results obtained show that commercial terebene is most varied in its composition, only one sample of the series (No. 9) being in strict accordance with the Pharmacopœia requirements.

A New Condenser.

By E. W. LUCAS.

This condenser practically consists of an annular steam-space, the inner and outer sides of which are contiguous to cooling-surfaces. This distinguishes it from forms of condenser where the steam-space is columnar or cylindrical, and contiguous to only one cooling-surface. Reference to diagram 1 shows that the cooling-water first ascends a comparatively narrow tube, A, and projects against the under-side of the dome. The concave end returns the water down a second and wider tube, B, through an orifice in the steam-space, C, to the outer tube or jacket, D, which it completely traverses before escaping at the outlet E. If the course indicated by the arrows is followed, it will be evident that the cooling-water exerts double duty.



In the first place, owing to the manner of its projection against the under-side of the dome, it brings all the

successive units of cold water into direct contact with the successive units of steam that are delivered against the opposite side, the steam and cooling-water only being separated by thin metal of high conductivity. In the second place, the water in its downward course cools the inner side, and in its upward course the outer side of the annular steam-space.

The steam enters at G, and at once impinges on the cold dome, where it loses most of its heat and practically condenses. The condensate is then pushed down the annular space by more steam from above until it finally escapes at H. Too much importance cannot be attached to the part played by the dome, as it brings the steam and cooling-water into the most intimate contact.

The following tests on the distillation of water were made with a copper condenser having a cooling-area of 100 square inches. Its extended length was 15 inches, and diameter 2 inches:—

—	1	2	3
Cooling-water, gals. per hour...	220	220	220
Cooling-water, temperature at inlet	58° F.	58° F.	58° F.
Cooling-water, temperature at outlet	98° F.	101° F.	104° F.
Condensate, gals. per hour ...	7.3	9.0	10.2
Condensate, temperature ...	130° F.	170° F.	197° F.
Steam-pressure, per square inch	15 lbs.	20 lbs.	25 lbs.
Duration of experiment ...	1 hour	1 hour	1 hour

Comparative Experiments between the Patent Condenser (100 square inches) and a Worm Condenser of equal area.

—	Patent Condenser	Worm Condenser
Cooling-water, gals. per hour... ..	90	90
Cooling-water, temperature at inlet...	52° F.	52° F.
Cooling-water, temperature at outlet	130° F.	98° F.
Condensate, gals. per hour	7.5	3.5
Condensate, temperature	176° F.	164° F.
Steam-pressure, per square inch ...	12 lbs.	12 lbs.
Duration of experiment	1 hour	1 hour

This comparison was made under precisely similar conditions as regards steam-supply and inlet and outlet of cooling-water. After the beat had proceeded for an hour the cooling-water was increased to 250 gals. per hour, the steam-pressure about the same time being gradually raised. At 25 lbs. to the square inch the patent condenser supplied over 10½ gals. per hour of distilled water. The worm condenser, on the other hand, could not condense more than 4 gals. per hour, and when the pressure was increased to 15 lbs. per square inch, steam blew through uncondensed, although the temperatures of both distilled and cooling water were still a long way below 212° F.

That this double form of condensation possesses great efficacy is exemplified by the following simple experiment:—

Steam was generated in a 2-gal. boiler over a powerful gas-stove, and sent into both the worm and patent condensers through ½-inch pipes at atmospheric pressure. Cooling-water was supplied to each condenser under equal conditions. When the steam was turned on both condensers condensed at an equal rate, but after a few minutes the worm condenser fell behind, although an equal amount of steam was offered to it. After half an hour or so the worm practically ceased distilling, because the patent condenser drew away the steam as quickly as it was generated.

This result is caused by the capillary bore of the annular steam-space ($\frac{1}{16}$ inch). The steam as it entered was immediately condensed on the dome, and, trickling down, drove the air before it, a perfect ring of water being formed. This cut off all the communication with the outer air, a partial vacuum being produced in the upper part of the condenser, which, by reducing the pressure, increased the rate of dis-

tillation. In the worm condenser no partial vacuum can be formed, as air circulates through the whole length of the coil, while if the bore is narrowed so that the condensed water will drive all the air before it the rate of condensation is sensibly diminished.

In all the tests this condenser has been tried against the worm type of condenser. Briefly, it may be said that it possesses at least double the efficiency of any other form of condenser; its construction is simple and admits the use of a brush for cleansing-purposes. Several forms of double condenser have been recently placed before the public, but as the author had the pattern described in use two years ago, he believes he may claim priority. Another point worthy of note is the fact that the cooling-water is used under pressure.

Liquor Bismuthi et Ammonii Citratis.

By FRANK R. DUDDERIDGE, Pharmaceutical Chemist.

In a note read before the Newcastle-upon-Tyne and District Chemists' Association, and published in abstract in THE CHEMIST AND DRUGGIST, March 18, 1899, I drew attention to the impossibility of obtaining a satisfactory preparation if the B.P. directions are strictly followed, owing to the precipitated bismuth citrate (?) not being completely soluble in solution of ammonia; also to the fact that the quantity of potassium carbonate ordered is inadequate to neutralise the free nitric acid, 236 gr. being required for 1 pint of liquor and only 175 gr. being ordered, with the result that the nitric acid renders the washings acid, and retains a certain amount of bismuth in solution, thus rendering the preparation deficient in strength. Mr. T. E. Wilson, my assistant at that time, obtained a soluble precipitate by omitting to dilute the nitric-acid solution to opalescence as directed in the B.P. and adding to it the potassium carbonate and citrate dissolved in a little water. This process has been followed since with varying results, sometimes the whole of the precipitate being readily soluble, at others more or less remaining undissolved; but always much more passed into solution by this method than by following the official process.

As I consider this state of things unsatisfactory and tending to lead the retail pharmacist to depend for his supply upon the wholesaler, I have devised a satisfactory and uniform process. First of all, the fact that Mr. Wilson's method always gave a much more readily soluble precipitate than the B.P. process, led me to suspect that the quantity of water present when the two solutions are mixed is a most important item. The B.P. gives no directions for any definite quantity, and the resulting precipitate may be to some extent an oxysalt, in all probability oxynitrate of bismuth, hence its insolubility. The method I adopt with satisfactory results differs from the B.P. only in these respects:—

(1) The solution of bismuth oxynitrate in equal volumes of nitric acid and distilled water is *not* diluted to opalescence: it is not diluted at all.

(2) The order of mixing is reversed, the potash solution not being added to the bismuth, but the bismuth poured carefully into the potash solution, which is kept well stirred all the time.

(3) I dissolve the potash salts in a definite quantity of water—2 oz. for an imperial pint of product, or 100 c.c. for a litre. This forms a thick magma, to which I add another 2 oz. or 100 c.c. of water, heat to the boiling-point, throw on to a filter, and wash with hot water until free from nitrate contamination, when it is easily soluble in solution of ammonia.

I also find that if the quantity of potassium carbonate be increased by one-third—i.e., 240 gr. or 27 grammes being used in place of 175 gr. or 20 grammes—the washings are practically neutral and very little, if any, loss of bismuth results. With these slight modifications the B.P. process may be easily and speedily performed in any pharmacy. Another point worth attention is that the B.P. does not use heat in effecting the solution of the bismuth oxynitrate, and my experience is that the heat produced in mixing equal volumes of nitric acid and water is quite sufficient to effect



solution if a little agitation be used. Too great heat appears to retard instead of aiding solution.

Mr. W. G. Stratton, in a paper read before the Glasgow Conference, reported that many commercial samples of liq. bismuthi contained an excess of ammonium citrate, causing considerable difference in the appearance of mixtures containing it in combination with an alkaline bicarbonate, those dispensed with a strictly B.P. liquor depositing, whilst those which are dispensed from a liquor containing such excess remaining clear. Whilst deprecating an unwarranted departure from the official process, I would suggest that in the next edition the formula should include 8 fl. oz. or 400 c.c. of liquor ammonii citratis and diluting to 1 pint or 1 litre of finished product as the case may be. Such a preparation would contain the double salt $\text{BiC}_6\text{H}_5\text{O}_7, (\text{NH}_4)_3\text{C}_6\text{H}_5\text{O}_7$, the formula of that contained in the present liquor, according to Attfield, being $(\text{NH}_4)_3\text{BiC}_6\text{H}_5\text{O}_7$.

The fungoid growth which so frequently develops may be prevented by the addition of alcohol, which Mr. Stratton found to be present in several samples.

Syrup of Balsam of Tolu.

By E. H. FARE, F.C.S., and R. WRIGHT, F.C.S.,
Pharmaceutical Chemists.

For some time past it has been our intention to take up the question of the best method of making this syrup, as we have had considerable doubt as to whether the process now official is the best available. That there is something defective in the Pharmacopœia-method would seem to be indicated by two facts, which everyone who has made this preparation must have noticed—viz, the amount of volatile matter driven off in the process of boiling the balsam with water, and the subsequent copious separation of crystals which takes place. The aromatic and acid principles represent the characteristic properties of the balsam, hence the object should be to introduce into the syrup as large a proportion of these substances as possible, having regard to the elegance of the product.

The first point of our inquiry was to ascertain as far as possible the precise relation which the official syrup bears to the balsam, and in this direction we had no published work available for reference. After looking up the literature bearing on the chemistry of balsam of tolu, we concluded that it would be necessary to work partly on scientific and partly on empirical lines, the prime object of our work being the production of an improved syrup. The amount of volatile flavouring-matter can be sufficiently estimated by the taste of the product, there being no scientific means of determination.

Two samples of balsam were procured—one old, brittle, and easily pulverisable, the other new and of the consistence of a firm extract—and it was on these that the experiments detailed in this note were conducted. The official carbon-bisulphide test gave the following results:—

	Hard balsam	Soft balsam
Total residue soluble in CS_2 per 100 grammes of balsam	20.5 grammes	32.8 grammes
Saponification equivalent ...	19.536 "	20.12 "
Free acid ...	9.62 "	11.24 "

The benzyl cinnamate (cinnamein) was determined by dissolving 10 grammes of the balsam in 30 c.c. of 10-per-cent. aqueous solution of potash, and shaking the resulting solution with ether. The ethereal solution was washed with further portions of weak alkali until nearly colourless, when it remained as a jelly-like mass. On adding carbon bisulphide and shaking, separation ensued, and the clear liquid was decanted from the insoluble residue and evaporated until all the ether and carbon bisulphide were expelled. The residue was then weighed in each case and saponified with alcoholic potash in known slight excess, the solution being afterwards titrated back with decinormal acid (1 c.c. normal

KOH = 0.238 gramme cinnamein), the results obtained being—

	Total weight of residue from 100 grammes	Cinnamein, by saponification from 100 grammes
Hard balsam ...	4.35 grammes	4.28 grammes
Soft balsam ...	8.55 "	8.04 "

For volatile constituents 500 grammes of soft balsam was distilled with water. The first portions of the distillate contained a very fragrant volatile oil lighter than water, consisting chiefly, if not entirely, of toluene. After separation of this body the water was returned to the retort and distillation continued. In the middle fraction of the distillate a further portion of the fragrant principle was seen, together with a denser product, drops of which collected at the bottom of the receiver. The whole of the last volatile products were denser than water, but did not separate very freely; it was therefore considered advisable to extract these two portions with ether, and distil off the latter, leaving the volatile oil. This having been done, the products of distillation proved to consist of—

A. A very fragrant volatile body lighter than water, 1.4 per cent.

B. A slightly fragrant mixture of A with a substance heavier than water and congealing in cold weather, 0.7 per cent.

The contents of the retort were next boiled with sodium carbonate and water, the resulting solution filtered and treated with excess of sulphuric acid, the quantity used being sufficient to combine with the whole of the sodium originally used. The solution was evaporated to a pasty consistence and treated with 90-per-cent. alcohol, then filtered. The cinnamic acid was recovered from the alcohol by evaporation and then twice recrystallised from boiling alcohol, after which it was crystallised from water. The final product amounted to 40 grammes, being 8 per cent. of the balsam operated upon. It melted at 131°C . (m.p. of cinnamic acid 133°C .) and 0.265 gramme required 17.8 c.c. decinormal soda to neutralise (= 0.2634 gramme cinnamic acid); these results indicating that the amount of benzoic acid present, if any, must be extremely small.

The constituents soluble in water, under different conditions of temperature, were next considered, the solutions being obtained by boiling with water, as in making the B.P. syrup; but the filtration was conducted under different conditions, such as might occur in actual practice:—

No. 1, filtered at 25°C ., contained 0.337 gramme cinnamic acid in 100 c.c.

No. 2, filtered at 20°C ., contained 0.260 gramme cinnamic acid in 100 c.c.

No. 3 (after standing all night), filtered at 5°C ., contained 0.148 gramme cinnamic acid.

These experiments indicate that the official syrup of tolu is liable to vary considerably, according to the time of the year it is made, and that it is desirable to filter the liquid as soon as it reaches a given temperature, and immediately convert it into syrup.

A number of syrups were next made from the two samples of balsam by each of the following processes, and the resulting products titrated. The flavour was judged by diluting with water and tasting the mixture. The syrups were prepared as follows:—

1. By the U.S.P. process—

Dissolve 10 of balsam in 50 of alcohol by the aid of heat, and pour on a mixture of precipitated calcium phosphate (50) with sugar (120). Triturate well, then set aside until the alcohol has evaporated. Next add 500 of water, by degrees, triturating well; filter bright. To the filtrate, heated to 140°F . (60°C .), add the remainder of the sugar; dissolve by agitation. Cool, strain, and make up with water to 1,000 fluid parts.

2. By the B.P. process.

3. One and a quarter of balsam dissolved in $1\frac{1}{4}$ of spirit was poured into simple syrup (34), well shaken, and after a time filtered. This form is given in Squire's "Companion," and is similar to the Edinburgh Pharmacopœia syrup, which was made by shaking 1 oz. tincture of tolu with 2 lbs. of warm syrup.

4. Five of balsam dissolved in 5 of alcohol was poured on 125 of sugar and well triturated in a mortar with water 240 until the sugar was all dissolved. The solution was next filtered bright and 300 of sugar dissolved in it by the aid of gentle heat. When cold the product was strained and made up to 500 with water.

5. Five of balsam in 5 of alcohol was poured into 240 of water heated to about 60° C., and the bottle containing the mixture well shaken, then set aside until cold, when the solution was filtered through powdered talc and converted into syrup 500.

6. Take 4 of balsam and dissolve in 12 of alcohol 90-per-cent., then add to 26 of water previously heated to 70° C. and placed in a bottle; shake vigorously, then set aside for twenty-four hours; filter bright; mix the filtrate with seven times its volume of simple syrup.

Of the foregoing the U.S.P. process is somewhat complicated and seems to defeat its special object, for the product has scarcely more flavour and is considerably less acid than the B.P. syrup. The B.P. form affords an elegant preparation containing a good proportion of acid constituents, but, as might be expected, is deficient in flavour. One-fourth part of the balsam might produce as good a preparation. No. 3 process yields a syrup superior to others in flavour, but filtration is very tedious and the finished product not bright. The syrup obtained by No. 4 was fairly aromatic, but was deficient in acid bodies. In No. 5 the amount of spirit used is insufficient. The flavour of the preparation made by No. 6 process is excellent, and it contains a high proportion of acid constituents. We consider that it might with advantage replace the form now official. If desired, the solution may be kept, and diluted with syrup as required, but, being a saturated solution, it is liable to deposit crystals in cold weather. In the subjoined table the constituents of the syrups prepared by the different methods are shown :—

Hard Balsam.

Process followed	Pts. of Balsam used in making 1,000 fluid pts. of syrup	Pts. of cinnamonic acid present in the same	Pts. of cinnamonic acid in the resulting syrup
U.S.P.	10	.962	.29
B.P.	34.72	3.33	Sum. 1.00 Win. .60
No. 3	34.72	3.33	1.12
No. 4	10	.962	.47
No. 5	10	.962	.44
No. 6	12.5	1.20	1.12

Soft Balsam

U.S.P.	10	1.12	.32
B.P.	34.72	3.9	Sum. 1.12 Win. .66
No. 3	34.72	3.9	1.09
No. 4	10	1.12	.47
No. 5	10	1.12	.43
No. 6	12.5	1.41	1.09

The quality of the syrups, as judged by their flavour, was in each case as follows:—Best, No. 3; 2nd ditto, No. 6, almost as good as No. 3; 3rd best, No. 4; 4th ditto, No. 5; 5th ditto, U.S.P.; last, B.P.

Notes on Hydrogen Peroxide.

By CHARLES T. TYLER.

I have endeavoured in the following paper to give some idea of the rate of decomposition, and protective value of various agents, in solutions of hydrogen peroxide :—

Hydrogen-peroxide solution, 10 vols., containing 0.5 per cent. of free sulphuric acid, was put in pint bottles stoppered, Winchester quarts stoppered, champagnes corked, soda-water bottles corked, half-gallon stone bottles screw-stoppered, and placed in diffused light at the ordinary temperature and atmospheric conditions. The strength of each was taken every month for six months; after that, as it seemed probable that the loss was accelerated by taking out the 1 c.c. from each necessary for examination, they were

allowed to remain until ten months had elapsed. The following are the results, the figures indicating volumes :—

—	Pints	W. Qts.	Champagnes	Soda-water Bottles	½-gall. Stone, Screw-stoppered
One month ..	9.8	9.0	10.0	9.6	10.0
Two months	9.0	8.4	9.2	8.9	9.6
Three months	8.7	8.1	8.7	8.5	8.8
Four months	7.9	7.8	8.5	8.2	8.6
Five months	7.3	7.3	8.1	7.6	8.0
Six months ...	6.5	7.0	7.6	7.1	7.9
Ten months...	3.5	4.8	5.0	4.9	5.3

Hydrogen-peroxide solutions of 12, 15, 20, and 30 vols. were bottled in champagne qts., leaving a space of 2 inches between the cork and the top of the solution. They were protected with glycerin, sulphuric acid, hydrochloric acid, boroglyceride, alcohol, phosphoric acid, and under identical conditions with No. 1 experiment. The following table gives the results :—

Protected with	Initial volume			
	12	15	20	30
1-per-cent. glycerin	8.9	11.7	15.3	17.0
1-per-cent. sulphuric acid ...	8.1	11.5	15.0	cork blown out
1-per-cent. hydrochloric acid ...	7.6	burst	13.2	14.3
1-per-cent. boroglyceride ...	8.8	11.6	15.0	16.4
1-per-cent. alcohol	8.6	11.6	15.2	16.0
1-per cent. acid phosphoric, 1.500	9.2	12.2	16.8	17.3

As hydrochloric acid appeared to be the worst protective agent, experiments were made with this alone. The 10-vol. solution was protected with 1 per cent. of hydrochloric acid bottled—(a) champagne qts. corked and wired, (b) Winchester qts. stoppered. The volumes were taken every month for six months, with the following results :—

Champagne: One month, 9.1; two months, 8.6; three months, 7.8; four months, 7.1; five months, 6.7; six months, 6.3. W. qts.: One month, 8.8; two months, 8.2; three months, 7.2; four months, 6.3; five months, 6.0; six months, 5.8.

1 W. qt. of 12 vols. phosphoric-acid protection, exposed to full sunlight during the hot weather at an average temperature of 73° for three weeks, lost 4.3 vols. 1 W. qt. of 20 vols. burst in thirteen days. 1 W. qt. of 30 vols. lost 27 vols. during three winter months in diffused light.

In order to ascertain the effect of different coloured quarts—amber, blue, and green—3 W. qts. of 12 vols. were taken. After six winter months in diffused light the amber qt. gave 7.4 vols., the blue qt. 6.9 vols., and the green qt. 6.6 vols. The above experiments were not subjected to shaking or vibration, a factor which has to be reckoned with as to loss in transit—thus, 10-vol. hydrogen per-chloride solution, phosphoric-acid protection, in champagnes and W. qts., was packed in straw in a hamper, and subjected to daily journeys from Stratford to the City for thirty days in June weather. At the end of this time the volumes had decreased to 7 and 7.3 in champagnes, while one W. qt. burst after the thirteenth journey, and the other survived to show a reduction to 6 vols. Similar experience was obtained with the solution having other preservatives in it, and in ten years' experience I find that during carriage champagne-bottles and soda-water bottles do not burst, but the bottles generally used in the drug-trade succumb to the extent of 1 or 2 per cent., W. qts. being most fragile. It is a mistake to order champagne-bottles and other containers of peroxide to be half full only, as there is less pressure de-

veloped if the space between the cork and the liquor is about 2 inches. Dr. Squibb, of Brooklyn, New York, in 1894 made experiments as to the rate and extent of pressure of gas evolved from hydrogen peroxide in a bottle at ordinary temperature, and found that a 10.5-vol. solution gave a pressure of 96 lbs. to the square inch. On repeating these experiments on W. qts. fitted with a pressure-gauge and surrounded with gauze, on a boiler-stove at a temperature of 125° F., the following were the results:—

Hydrogen peroxide, 20 vols., phosphoric-acid protection: after six hours the pressure indicated 35 lbs. to the square inch, after fourteen hours 42 lbs. to the square inch, and burst between four and five hours later.

Peroxide, 20 vols., after twelve hours' pressure, indicated 43 lbs. to the square inch, and burst between two and three hours later.

Peroxide, 12 vols., after eight hours gave pressure of 35 lbs. to the square inch, and burst between nine and ten hours later.

Peroxide, 12 vols., burst after six hours.

Several other experiments were attempted, but owing to the inequality in strength of the bottles no concordant results were obtained. Care should be taken in the selection of bottles for storing hydrogen peroxide; any angular inequality hastens decomposition, as do the small rough patches of iron oxide frequently found on stone bottles.

It may not be generally known that by careful evaporation hydrogen peroxide can be highly concentrated to 50 to 100 or more vols.; for greater volumes it must be concentrated *in vacuo*, but if during evaporation the slightest speck of dust or dirt come in contact with the solution, the evolution of gas is rapid, and in some cases almost explosive. The clear oily residue left in the retort on evaporation *in vacuo* of pure hydrogen peroxide (presumably absolute hydrogen peroxide), if rubbed with a glass rod, explodes most violently—indeed, loss of life from this cause occurred a year or two ago in Germany. Hydrogen peroxide can also be concentrated by freezing, the ice crystals containing very little hydrogen peroxide.

During the last two years the use of hydrogen-peroxide solution as an oxidising-agent in analysis has greatly increased, and for this purpose practically pure solution is required. This solution, however, is too unstable for ordinary pharmaceutical use. It should contain none of the ordinary protective agents, and should show only the faintest traces of chlorides, fluorides, sulphates and phosphates. The best method of keeping it in a laboratory is to store in a receiver having a tap at the base, the solution being protected by a layer of petroleum carefully poured on the surface. In ordering hydrogen peroxide "medicinal" or "B.P." should be specified.

Of all the modes of protection phosphoric acid seems to be the best as well as medicinally least harmful.

The above experiments were carried out in the laboratories of Messrs. Thomas Tyrer & Co. (Limited), Stirling Chemical-works, Stratford, E., and Mr. A. Wertheimer has given me valuable assistance in preparing the notes.

Further Note upon Ferrum Redactum, P.B. 1898.

By E. SAVILLE PECK, B.A. (Cantab.).

During the discussion which followed the reading of my paper upon "Ferrum Redactum" at the last Conference, the question arose as to whether I had compared my results of the estimation of ferrum redactum by the methods of the British and United States Pharmacopœias with that of the "iodine method." I now endeavour to answer the inquiry. This method, devised by E. Schmidt, is given in the *Year-book of Pharmacy*, 1898, and is as follows:—

£ Saville Peck

0.4 gramme of the finely-powdered sample is heated in a 100-c.c. flask with 10 c.c. of water, then slowly with 2 to 2.5 grammes of powdered pure (and dry) iodine, the latter being added gradually from a weighed tube. When the action is completed, any iodine adhering to the neck of the flask is washed down with water, 1 gramme of potassium iodide is added, and after the iodine is all dissolved, the liquid is diluted with water to exactly 100 c.c. It is then shaken and allowed to

settle, and the excess of iodine is titrated in 50 c.c. of the clear liquid by means of decinormal sodium-hyposulphite solution. After deducting the total excess of iodine from the quantity originally taken, the difference represents the amount of iodine used up in the formation of ferrous iodide, from which the percentage of metallic iron in the sample is readily calculated.

In working the method the ferrum redactum was powdered and passed through a No. 60 sieve. The iodine was resublimed and powdered, introduced into a stoppered weighing-tube, and weighed by difference. The decinormal sodium-thiosulphate solution was standardised by decinormal iodine which had been previously standardised by arsenious anhydride. Notwithstanding all these precautions it seemed impossible to obtain concordant results, as the same sample yielded 41.51, 43.60, and 38.34 per cent of iron. I then used much less water (0.5 to 1 c.c. for 0.27 to 1.25 gramme of reduced iron), and found that the action of the iodine upon the iron was immediate and complete, but not sufficiently violent to cause any appreciable loss of iodine from volatilisation—a stoppered 100-c.c. flask being used in each case. The results were concordant—viz., 82.01, 81, and 82.09 per cent. Fe with one sample (P); and 39.03, 40.67, and 40.98 with another (Q).

By the copper-sulphate (B.P.) method the percentage of Fe was for P, 83.42, 83.91, and 84.52; and for Q, 53.73, 52.58, and 52.88.

The mercuric-chloride method was also tried, and the whole results are summed up in the following table, which shows percentages of iron by the respective methods:—

Sample	Copper Sulphate	Mercuric Chloride	Iodine
P {	4 83.42	81.19	82.01
	5 83.91	81.63	81.24
	6 84.52	81.52	82.09
Q {	4 53.73	38.45	39.03
	5 52.58	38.45	39.03
	6 52.88	38.90	40.98

From this comparison it will be seen that the mercuric-chloride and iodine methods give almost similar results in both samples, although the two samples differ widely in percentage of pure Fe. From this fact we may surely infer that one corroborates the other. It will also be noticed, as I pointed out last year, that the copper-sulphate method invariably gives a higher reading than the mercuric-chloride method, and the lower the percentage of pure Fe in the sample the greater the difference in the result of the two methods; therefore, although it seems comparatively easy, by adopting various precautions and conducting each estimation under like conditions, to obtain concordant results by the copper-sulphate method, it does not necessarily follow that these results give the accurate percentage of the sample. The copper-sulphate method is not satisfactory. I have to thank Mr. R. Foster Moore for kind assistance.

Assay of Belladonna-plasters, B.P. 1898.

By H. J. HENDERSON, Pharmaceutical Chemist.

The assay of belladonna-plasters presents some considerable difficulty, owing to their complex composition. To be of practical utility to a busy pharmacist a process must not be complicated, yet yield not merely approximate results. One point in favour of the process I have devised is the absence of that tendency to form intractable emulsions of chloroform and alkaline solution. The separation of the extract of belladonna from the other constituents of the plaster is the chief difficulty to be overcome, for, this once done, the shaking-out of the alkaloid with an immiscible solvent, on the lines laid down in the B.P. for the assaying of the liquid extract, is all that is necessary for the completion of the assay. Ether was found to be the most suitable solvent for washing away the plaster from the



H. Henderson

extract, in combination with a mixture of glacial acetic acid and water as now described :—

Weigh 5 grammes of the plaster and introduce it into a stoppered glass separator with 25 c.c. of ether; allow the plaster to disintegrate. When the contents of the separator present the appearance of an emulsion add 5 c.c. of a mixture of glacial acetic acid and water (3 parts of the former to 2 parts of the latter), shake for 30 seconds, and set aside until the acid liquor has completely separated. Draw off the lower layer into a small beaker, and again agitate the ether-solution with 5 c.c. of B.P. dilute acetic acid, and draw off as before. To the united acid liquors in the beaker add dilute sulphuric acid in slight excess, stir well, and allow the sulphate of lead to subside. Filter the solution through a small filter into a separator, transferring the whole of the sulphate of lead on to the filter by means of a glass rod tipped with rubber; allow to drain. Remove the funnel from the separator, and wash the lead precipitate with distilled water until a drop of the filtrate gives no precipitate with Mayer's reagent. Concentrate the washings to a small bulk, and add them to the contents of the separator. The separator now contains the extract of belladonna freed from the other constituents of the plaster. Add excess of solution of ammonia and 10 c.c. of chloroform, shake well for thirty seconds, and draw off the chloroform into another separator. Repeat this treatment with two more successive portions of chloroform of 5 c.c. each, mix the chloroformic solutions of the alkaloids, and shake out the alkaloids with three successive portions of dilute hydrochloric acid, using 5 c.c. for each shaking. To the mixed acid solutions in a separator add excess of solution of ammonia and 10 c.c. of chloroform, shake well, and draw off the chloroform into a weighed dish; repeat the shaking with two successive portions of chloroform, using 5 c.c. for each, draw off as before, and allow the chloroformic solutions to evaporate spontaneously. Dry the residue in the air-oven at a temperature not exceeding 93° C. until the weight is constant, and weigh.

The residues obtained were beautifully white and crystalline. The following results were obtained with this process applied to a plaster prepared by myself from a liquid extract of belladonna which I estimated for the purpose, showing the plaster to contain exactly 0.5 per cent. of alkaloid. The purity of the alkaloidal residues was proved by Dunstan and Ransom's periodide-process. The weight of plaster taken in each case was 5 grammes, the theoretical quantity of alkaloid obtainable being 0.0250 gramme :—

	Weight of Residue	Weight by Dunstan and Ransom's Method
a	0.0235	0.0225
b	0.0230	0.0221
	0.0233	0.0225

Weight of Residue	Weight of Pure Alkaloid indicated by Volumetric Method
0.0240	0.0243
0.0230	0.0229
0.0230	0.0231

It will be noticed that in two of the volumetric estimations a *plus* error appears, yet the figures appear to justify the conclusion that the residues are practically pure. The experiments necessary for the paper were carried out in the laboratory of Messrs. W. Ransom & Son, of Hitchin.

Commercial Carbon Disulphide.

By W. ELBORNE, M.A.

A quantity of the best commercial carbon disulphide (about 200 c.c.), clear and bright, contained in a clear glass bottle fitted with a cork, capped with parchment-paper, was left unopened and undisturbed for six months in a situation exposed to strong diffused daylight. During the period it developed a surprising copious flocculent brown deposit; upon filtering off and drying the same at a low temperature, it was left as a buff-coloured powder insoluble in water, alcohol, ether, and chloroform respectively; soluble in warm aqueous caustic soda, yielding a yellow-coloured liquid, not reprecipitated by acetic acid, but copiously on addition of solution of silver nitrate to the latter acid liquid. Fresh portions (1) charred readily on being touched with sulphuric acid; (2) on being cautiously

heated on platinum foil immediately disengaged most inflammable vapours, igniting with a luminous sooty flame, leaving a residue of carbon which readily burnt off; (3) added to a hot fused mixture of pure caustic soda and potassium nitrate, underwent vivid ignition; the cooled mass dissolved in water copiously evolved carbonic-acid gas on addition of excess of hydrochloric acid, but was not precipitated on further addition of barium chloride, indicating the absence of sulphates, and consequently of sulphur, in the original substance. The sample of carbon disulphide evidently, therefore, contained impurities which had been decomposed, or at least rendered insoluble, by exposure to light (in part possibly attributable to extractive from the cork), or had itself undergone some decomposition.

In a recent extended research on carbon disulphide (*Journ. Chem. Soc.*, 439, page 604), Dixon and Russell purified their material as follows :—

The best commercial carbon disulphide was allowed to stand some hours with bromine in the cold; the bromine was then removed by potash, and the carbon disulphide shaken for an hour with alkaline permanganate. After washing well with water, it was dried over calcium chloride and distilled, the first portion only being collected. Care was always taken to avoid unnecessary exposure to light. The substance thus obtained boiled very constantly at 46.8° C. under 772 mm. pressure.

They also showed that the pure substance underwent decomposition by exposure to light, yielding upon evaporation a brown, uninviting-looking gummy substance, not further examined. For chemical purposes carbon disulphide should consequently be stored in glass-stoppered bottles and be kept as far as possible from the action of light.

The Liberation of CO₂ from Bicarbonate of Sodium by Heat.

By C. S. DYER.

During my inquiry last year on the granular preparations the question arose whether sodium bicarb. decomposed in itself during the heat of granulation to any extent, and to test this point a small quantity was heated to about 102° C. for ten minutes and weighed, the loss being about 2 per cent. This was assumed to be moisture, and the practical stability of the salt under those conditions was taken for granted without further experiment.

Since then Mr. Cowie, of Edinburgh, has read a paper stating that he found bicarbonates decompose at between 50° and 60° C. Renewed investigation was undertaken to clear up the matter.

Three processes were adopted: (1) Heat the weighed salt and find the loss by weight; (2) measure the gas evolved; (3) collect the products of decomposition in potash bulbs and calc. chlorid. tubes, weigh, and check by the loss in weight of salt used.

The results I obtained were as follows by process (1):—100° C. was the lowest heat tried; after ten minutes at 100° 0.77 per cent. loss occurred; after twenty minutes at 100–108° 1.7 per cent. loss occurred; after thirty minutes at 100–110° 3.17 per cent. loss occurred; which bears out my last year's experiment.

In process (2) 0.488 gramme was heated in a tube connected with a nitrometer for periods of ten minutes at different temperatures, and the gas measured when cool. The possible quantity of CO₂ which could be liberated was 65 c.c. Before 90° C. no evolution took place, when 6 c.c. was yielded; at 100° C. 1 c.c., and at 120° 2 c.c. was evolved. Thus up to 120° 2 c.c. was liberated out of a possible 65 c.c. This is so small because of the absence of air-circulation, which of course removes the H₂O when set free. The heat was then quickly raised to 178° C., and at end of experiment only a little more than half the available CO₂ was lost.

In the third method, which is practically the organic combustion apparatus, different temperatures at ten-minute



periods were adopted, and the mean of a number of experiments shows that the CO_2 lost at 60° and under is scarcely appreciable, but that above that temperature a fairly regular liberation occurs, increasing as heat rises. As a result of my experiments I find that below 100° C. dry NaHCO_3 decomposes very slowly, below 60° C. inappreciably, and above 120° C. decidedly rapidly.

I have no doubt that Mr. Cowie's experiments were quite accurate, but finding traces of CO_2 by a delicate test on heating a bicarbonate to about 55° is not sufficient ground for saying that the salt decomposes at that temperature to any practical extent, and probably the CO_2 merely came over with the small amount of moisture always present.

The Composition of Commercial Araroba.

By EDWIN DOWZARD, F.C.S.

In the 1885 B.P. araroba was synonymous with chrysarobin, but the official description is now as follows:—

ARAROA.—A substance found in cavities in the trunk of *Andira Araroba*, Aguiar, freed as much as possible from fragments of wood, dried, and powdered.

Test.—It should yield to hot chloroform not less than 50 per cent. of chrysarobin.

This is yet another of the many pharmacopoeial inconsistencies which have been pointed out. In some cases the B.P. tests are so stringent that it is almost impossible to obtain articles which will satisfy them; in other cases, such as the present, the B.P. tests will admit an adulterated article.

The worst sample of araroba which I have yet examined contained about 8 per cent. of sand, and 20 per cent. of twigs; when dried and powdered it yielded 51.8 per cent. of chrysarobin, and yet this is practically 2 per cent. above the B.P. limit, therefore in this case a sample which had been adulterated to the extent of about 28 per cent. was well within the B.P. requirements. Araroba containing from 65 to 75 per cent. of chrysarobin is easily obtainable, and it would be advisable to make the former figure the minimum limit.

As imported, araroba contains a large proportion of water (usually from 14 to 30 per cent.). I have been informed that water is added, not as an adulteration, but to prevent an irritating dust arising.

The following table gives the results obtained in the examination of nine samples of commercial araroba:—

—	Chrysarobin	Water	Woody Fibre, &c.	Ash
1 { A ...	54.90	30.06	14.13	.91
1 { B ...	78.50	—	20.20	1.30
2 { A ...	51.37	32.06	14.02	2.55
2 { B ...	75.61	—	20.64	3.75
3 { A ...	62.39	18.60	18.51	.50
3 { B ...	76.65	—	22.74	.61
4 { A ...	64.40	22.10	13.20	.30
4 { B ...	82.67	—	16.95	.38
5 { A ...	65.99	22.50	11.11	.40
5 { B ...	85.14	—	14.35	.51
6 { A ...	62.00	17.90	19.71	.39
6 { B ...	75.51	—	24.01	.48
7 { A ...	43.79	25.60	26.90	3.51
7 { B ...	59.02	—	36.25	4.73
8 { A ...	44.34	14.40	32.96	8.30*
8 { B ...	51.80	—	38.50	9.70
9 { A ...	49.97	20.30	23.27	6.46*
9 { B ...	62.70	—	29.20	8.10

A = Sample as received. B = Sample dried.

* Consists principally of coarse sand.

It is almost impossible to powder araroba, because of the large proportion of water present. The method which I am in the habit of using is to spread out the sample and take

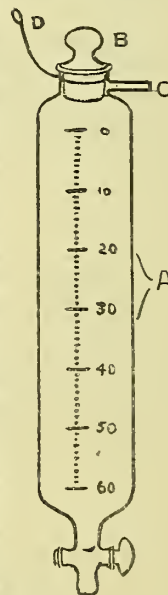
a fair average (weight about 25 gr.). Determine the weight before and after drying at 100° C, the percentage of water being calculated from the loss. The dry sample is ground in a small drug-mill, and chrysarobin and ash determined in the resulting powder; the woody fibre, &c., is found by difference. The percentage of water being known, it is an easy matter to calculate the composition of the original sample. Pure drug araroba contains from 70 to 85 per cent. chrysarobin and 3 per cent. of ash.

A Weight-burette.

By E. SAVILLE PECK, B.A.

A weight-burette is a burette which can be weighed before and after titration, giving the weight of solution used instead of the volume. The one illustrated is designed by Mr. C. T. Haycock, M.A., F.R.S. Such burettes have been used in the Sydney College Laboratory, Cambridge, when determinations of great accuracy are required. The burette consists of:—A. An ordinary glass cylinder of about 70 c.c. capacity, very roughly divided into c.c. These divisions are not absolutely necessary, but they are useful in the case of a second titration of the same solution. B. A hollow stopper with a small perforation opposite C, which is a glass tube, used to admit the air when drawing out the solution without taking out the stopper. C. An ordinary glass stopcock. D. A wire loop for hanging the burette upon the hook above the balance-pan.

A standard weight-solution is made by taking a flask, carefully drying and weighing it, the standard substance being introduced into this from a stoppered weighing-tube, and water added to approximate volume desired and solution effected. The whole is then weighed—the weight of dry flask being known, the weight of the solution is found. The strength of this solution is then x grammes of standard substance in x grammes of the solution, which therefore becomes the standard solution. This standard solution is placed in one of these burettes, and another filled with the solution to be estimated. Both are carefully weighed—a certain quantity from one, say, 10 to 15 grammes, is run into a suitable vessel in which the titration can be made, and again weighed—the titration is then carried out, and the weight of the second burette found. It is seen that a definite weight of the solution of unknown strength requires a definite weight of standard solution, which in its turn contains a definite weight of standard substance. From these data the strength of the unknown solution is obtained. Although the method takes longer, the accuracy and uniformity of the results obtained justify the extra expenditure of time and trouble when strict accuracy is required.



Delphinium Staphisagria, L.

By E. M. HOLMES, F.L.S.

Until I received a parcel of seeds of *Delphinium Staphisagria* from a continental botanic garden I had imagined that the plant grown from the commercial seed employed in pharmacy was correctly named.

Plants grown from the continental seeds had pale lilac flowers, a spur nearly as long as the calyx, pubescent stems, and a rigid habit different from other garden larkspurs.

Being unable to raise plants from commercial seeds, two living plants were obtained for me by Messrs. Potter & Clarke from the district whence the seeds are obtained. One of these was forwarded to Kew, and the other to the botanic gardens at Cambridge.



The plant had bright blue flowers, with oval-obtuse sepals, and very short spurs, not exceeding two lines long. The stem and petioles were densely covered with spreading long soft hairs, intermixed with shorter glandular hairs.

The flowering-plant was compared with specimens of *D. Staphisagria* in the national herbaria at Kew and South Kensington, and was undoubtedly genuine if the herbarium specimens were correctly named, and on comparing with Linnæus's own specimen it corresponded exactly. Comparison with published figures of *D. Staphisagria* revealed the fact that, in books as well as in botanic gardens, two species have been confused under the same name (*D. pictum*, Willd., and *D. Staphisagria*, L.). The two plants, however, have very distinct characteristics. [References were then made to published plates of the *Delphiniums*.] The true *D. Staphisagria* extends from Teneriffe, around both the northern and southern coasts of the Mediterranean, to Asia Minor, according to specimens in the British national herbaria. It is quite possible, therefore, that varieties having blossoms of different tints may occur. The evidence obtained goes to show that the form of the plant from which the seed of commerce is obtained has clear blue flowers. The exact country from which the seeds are imported I have been unable to learn with certainty, but I believe them to come from the Adriatic, *via* Trieste.

Analytical Notes on the B.P. Lozenges.

By FREDERICK DAVIS.

In a paper on medicated lozenges read before the Conference in 1891 I reported on B.P. lozenges, and as Professor Atfield in his Pharmacopœia report suggested that the work should be continued, I have made periodic examination of lozenges since, but fail to find any improvement in the condition noticed in 1891. The directions of the B.P., in which definite weights of active ingredient and definite weights of basis are ordered, tend to greater accuracy in active ingredient, but lozenges of different makers still vary in size and shape



The following are the amounts of active ingredients found in commercial lozenges:—

Benzoic Acid.—(1) 0.54, (2) 0.55, (3) 0.52, (4) 0.50, (5) 0.52, (6) 0.54 gr.

Carbolic Acid.—(1) 1.01, (2) 1.01, (3) 1.12, (4) 1.08, (5) 1.14, (6) 0.98 gr.

Tannic Acid.—(1) 0.51, (2) 0.50, (3) 0.54, (4) 0.53, (5) 0.49, (6) 0.49 gr.

Bismuth.—(1) 2.1, (2) 2.08, (3) 2.0, (4) 2.09, (5) 1.97, (6) 2.0 gr.

Reduced Iron.—(1) 1.2, (2) 1.1, (3) 1.0, (4) 1.05, (5) 1.08, (6) 1.18 gr.

Krameria and Cocaine (only cocaine estimated).—(1) 0.38, (2) 0.49, (3) 0.44, (4) 0.5, (5) 0.42, (6) 0.51 gr.

Morphine.—(1) 0.28, (2) 0.30, (3) 0.28, (4) 0.26, (5) 0.27, (6) 0.32 gr.

Morphine and Ipecacuanha (only morphine estimated).—(1) 0.29, (2) 0.31, (3) 0.28, (4) 0.29, (5) 0.31, (6) 0.27 gr.

Potassium Chlorate.—(1) 3.2, (2) 3.02, (3) 3.19, (4) 3.2, (5) 3.6, (6) 3.03 gr.

Santonin.—(1) 0.98, (2) 1.02, (3) 1.15, (4) 1.1, (5) 0.92, (6) 1.21 gr.

Sodium Bicarbonate.—(1) 4.2, (2) 3.5, (3) 3.1, (4) 3.3, (5) 4.1, (6) 3.9 gr.

Sulphur.—(1) 6.5, (2) 5.9, (3) 5.2, (4) 5.3, (5) 7.4, (6) 6.9 gr.

Catechu, eucalyptus, guaiacum, ipecacuanha, and krameria were not determined. In all cases the quantity of active ingredients ordered by the B.P. is very nearly approached, and, taking into consideration experimental error, the constants are good excepting in the sodium-bicarbonate and sulphur lozenges, in the making of which laxity appears to exist. In the reduced-iron lozenge the estimation was calculated upon 75-per-cent. basis of metallic purity. No examination of the basis was made in any case.

Commercial Terpeneless Oils of Lemon and Orange.

By T. H. WILLIAMS IDRIS, J.P., F.C.S.

As a large user of lemon preparations I have had terpeneless oils of lemon and orange under observation in the laboratory of my firm for the last few years, but the present notes refer only to recent examinations of products now on the market. The lemon oils appear under several names, and are stated to have a flavouring-power equivalent to some thirty times that of good lemon oil. The coppers of ordinary lemon oil as imported often have attached to them certificates of analysis guaranteeing the contents to contain 7 per cent. of citral, but too much reliance should not be put on such statements, as they may possibly apply to a mixture of lemon terpene and lemongrass citral. Such a mixture, though containing no genuine lemon oil, would be certified as pure if the rotation, sp. gr., and amount absorbed by sodium-bisulphite solution were the only tests to which oil was subjected, but the terpeneless oil produced from such a sample would be easily recognised as lemongrass citral.*



Variations are naturally to be expected in the quality of the most carefully prepared terpeneless oils, and make it difficult to fix any definite standard for the manufactured products; but it must be admitted that a "terpeneless" oil implies that (a) the product is free from terpenes, and (b) is manufactured solely from the oil bearing its name. How far commercial samples (which vary in price from, say, 60s. to 120s. per lb.) correspond with these requirements will be seen.

For the purpose of comparison, I have used samples manufactured from the purest oil of lemons obtainable in my own laboratory. Many of these were examined, and the results of two typical samples of terpeneless oils are here given:—

	1	2
Sp. gr. at 15.5°	0.8966	0.8963
Optical rotation 100-mm. tube	—8° 53'	—7°
Absorbed by solution of NaHSO ₃	63 per cent.	61 per cent.
Not absorbed by solution of NaHSO ₃	38 per cent.	39 per cent.

Practically none of either distilled under 220° C. at ordinary atmospheric pressure, and the oil was soluble in all proportions in 90-per-cent. alcohol, and in twenty to thirty volumes of 70-per-cent. alcohol. No terpenes could be identified in either, and only very small quantities could possibly have been present.

Thirteen commercial samples of terpeneless lemon oil were procured through ordinary business sources, and the following results were obtained from them:—

No.	Sp. gr. at 15.5°	Rotation 100-mm. Tube	Absorbed by NaHSO ₃	Not Absorbed	Solubility in 70% Alcohol	Solubility in 90% Alcohol
1	0.8956	—7° 12'	67%	33%	1 in 9	In all proportions
2	0.8963	—7° 21'	42%	58%	1 in 20	"
3	0.8712	+41° 21'	8%	92%	Very insoluble	" 1 in 4 "
4	0.8966	—11° 5'	6%	94%	"	1 in 4
5	0.8943	—1° 41'	76%	24%	" 1 in 3 "	In all proportions
6	0.8836	+10° 58'	30%	70%	Very insoluble	1 in 3
7	0.9036	—6° 20'	51%	49%	" 1 in 2 "	In all proportions
8	0.8698	+42° 6'	15%	85%	Very insoluble	Very insoluble
9	0.8707	+38° 21'	14%	86%	"	"
10	0.8966	+2° 8'	70%	30%	" 1 in 40 "	" Soluble in all proportions "
11	0.8925	—7° 15'	61%	39%	1 in 15	"
12	0.8956	0°	66%	34%	1 in 6	"
13	0.8955	0°	67%	33%	1 in 7	"

These results show such great differences that it is almost incredible that the products should have the same name.

Samples Nos. 1, 2, and 11 are, in my opinion, all genuine. Their odour was fine and purely lemon, and no traces of

terpenes could be detected. These three samples were all made by the same firm, and obtained through different channels. Samples Nos. 3, 6, 8, and 9 were merely ordinary oil of lemon to which a little citral had been added, or from which a portion of the terpenes had been removed. The low sp. gr., high rotation, and insolubility indicate this. In each case considerable quantities of terpenes, sp. gr. 0.855 to 0.865 and opt. rot. over $+50^\circ$, were separated. No. 7 was sold as a synthetic oil—an absurd name for this product. It had a marked verberna odour. No. 4 contained very little citral and had a very poor lemon odour. Nos. 5, 12, and 13 had distinct verberna odours and clearly contained lemon-grass citral. No. 10 had a fine lemon odour, and I have been able to ascertain beyond doubt that it is a genuine product, but a little of the terpene has been left in the oil, which should have been concentrated a little further.

The great difference in the value of these products is apparent, and users of terpeneless oils should be careful in their purchases, as so-called "terpeneless" and "concentrated" lemon oils are offered at absurd prices.

I have also examined several samples of commercial terpeneless orange oil. These have the following characteristics:—

No.	Sp. Gr.	Opt. Rot. 100 mm.
1	...	0.890 ... $+17^\circ$
2	...	0.894 ... $+12^\circ 8'$
3	...	0.878 ... $+33^\circ 4'$
4	...	0.884 ... $+24^\circ 40'$

I have not compared these samples with any of my own make, but the low sp. gr. and the high optical rotation of the last two samples indicate the presence of a considerable quantity of terpene.

Salient Features of the Flora of Devonshire.

By G. CLARIDGE DRUCE, M.A., F.L.S.

By the generosity of the long-suffering Hon. Secretaries, the author at the meeting of the Conference in Glasgow dealt with the flora of Scotland, and at Belfast with that of the Emerald Isle. He now did the same for Plymouth, saying:—I am quite sure everyone who goes with us up the Tamar will have but one opinion as to the rare beauty of Devon. The geology of the district is entirely different from that of the districts of Oxford and Belfast, and, in fact, in its granite, shales, slates, and crystalline limestone beds we have hard igneous rocks, which accounts for the bold and almost mountainous character of the scenery. Indeed, on Dartmoor, within twelve miles of Plymouth, we have hills attaining to 1,700 feet in altitude. I need say very little about the flora of the neighbourhood of Plymouth since one of the very best local floras ever compiled is that which was written by my late friend Mr. T. Archer Briggs. It is only to be hoped that a flora of the whole of the large county of Devon may ere long be issued on similar lines, although it will be a difficult task to accomplish. I have prepared a table showing roughly how the flora of Plymouth and Devonshire compares in numbers with that of Oxfordshire, Ireland, and the United Kingdom. But the difference is much greater than the figures would lead us to suppose. The county of Devon possesses over 100 species which are not native in Ireland, nearly 140 which are not native in Scotland, and nearly 180 which are absent from Oxfordshire. In the last case this large number is made up to a considerable extent of maritime species, Oxfordshire being entirely inland. But I may state that probably the flora of Devonshire is not smaller in number than the flora of the whole of Ireland. I may draw your attention to some of the more interesting rarities. First among them is a small iridaceous plant which occurs on the sands at Dawlish but nowhere else on the British mainland—namely, *Trichonema Columnæ*, which has a wide range on the Mediterranean coasts. Another rarity confined to Devon and Cornwall is *Hypericum undulatum* (which may eventually be found in Ireland), while *H. linearifolium* is also confined to the Peninsula and



G. C. Druce

one locality in Carnarvonshire. *Geranium versicolor* or *striatum* is quite naturalised about Plymouth. Two species of *Lotus*—namely, *angustissimus* and *hispidus*, which are limited to the southern coast of England—are not infrequent about this town. Several rosaceous plants of interest occur—namely, *Rosa micrantha* var. *Briggsii*, *Pyrus latifolia*, and a small-fruited pear, *P. cordata*, which has a wide range in the East of Europe and Western Asia.

The order *Umbelliferae* affords two interesting species—namely, *Eryngium campestre*, which occurs close to the Hoe; and another, a woodland species, *Physospermum commutatum*, was for a long time thought to be a species endemic to the Peninsula and called *P. cornubiense*, but it is now considered to be identical with the continental form named *commutatum*. *Valerianella eriocarpa* has been found as an introduced plant, as has a pretty toad flax named *Linaria supina*, which is common on the Cattedown quarries, to which it is supposed to have been introduced with ballast. The graceful little *Sibthorpia* is found in damp, shady places, while the handsome labiate *Melittis melissophyllum* is found in many woods, and is interesting to us as containing coumarin. A curious dock, *Rumex rupestris*, is not infrequent by the coast. *Poa bulbosa*, a small bulbous grass, appears on the Hoe, but its headquarters in Britain are on the eastern coast. Another local grass, *Glyceria Borreri*, is found in muddy salt-marshes. In addition to these, but outside the twelve-mile radius, are the white rock-rose, only known in Somerset and Devon; *Lobelia urens*, restricted to Devon and Cornwall; *Bupleurum aristatum*, a small umbelliferous plant found near Torquay; *Senecio squalidus*, found near Bideford; *Ononis reclinata*, known with certainty only in Devonshire, where it is found in the eastern part of the county; *Aster Linosyris*, a late-flowering composite; *Scirpus Holoschaenus*, only known from Devon and Somerset; a very rare fern, *Asplenium septentrionale*; two rare species of *Euphorbia*—namely, *E. Peplis* and *E. hifima* [?], and *Polycarpon* are also found. It will, therefore, be seen how rich in rare species is this lovely country. I may also add that on our excursion we shall see a variety of *Melampyrum pratense*, which I named some years ago as var. *hians*, near the Weir Bridge; and years ago on the Cattedown quarries I met with an interesting species of *Lepidium*, *L. perfoliatum*, which has a curious heterophyllous condition of foliage. On that occasion I also added a species of *Euphrasia* new to Britain in finding *E. occidentalis* on the Devon coast: it had previously been known only from the Isle of Ushant.

Almond and other Kernel Oils.

By JOHN C. UMNEY and RALPH S. SWINTON.

The new British Pharmacopœia, in its characters and tests for expressed almond oil, gives the following test as



J. C. Umney



Ralph S. Swinton

indicating the absence of peach-kernel and other fixed oils:—

If 2 c.c. of the oil be well shaken with 1 c.c. of fuming nitric acid and 1 c.c. of water, a whitish, not brownish-red, mixture should be formed, which after standing for six hours at about 50° F. (10° C.) should separate into a solid white mass and a nearly colourless liquid.

This is practically the same test as given in the U.S.P., which also includes a test for the oil which is practically that of the German Pharmacopœia, and is based on the

researches of O. W. Peters,* depending upon the fluidity at 15° C., and solubility in alcohol of the separated fatty acids. This test is valueless for the purpose of distinguishing the presence of peach and apricot oils in almond oil, and does not give definite results for the detection of cotton-seed, which can be detected with greater certainty by Halphen's reaction. This reaction is obtained by heating in a boiling sodium-chloride solution equal parts of the oil, amyl alcohol, and carbon disulphide, the last containing 1 per cent. of sulphur. In the presence of less than 5 per cent. of cotton-seed oil an orange to red colour is developed.

The question has arisen lately as to whether the British Pharmacopœia test alone is a satisfactory distinguishing one or not. It should be stated, first of all, that the oil sold by some as a second grade of almond oil, under the name of "Oleum amygdalæ persic." or "Oleum amygdalæ exot.," is derived, according to their relative market-values, from either apricot or peach kernels. At the present time the former are considerably cheaper, and the oil met with in commerce is almost without exception apricot-kernel oil. The characters of oils of apricot and peach kernels have been dealt with by Maben,† who, amongst other things, reported upon the difference in behaviour of the oils to the nitric-acid test as compared with true almond oil. In a subsequent letter in the same journal, page 976, he refers to the fact that the specimens which he examined were very inferior to those pressed in this country, and he refers to the difference in reactions shown on cursory comparison of pure oils from those upon which he had previously reported.

A few experiments have been made, therefore, to ascertain whether the pure oils of apricot and peach kernels are identical or behave similarly when the pharmacopœial test is applied. The oils were obtained by expression and by extraction with ether from both varieties of kernels. In sp. gr. they are practically indistinguishable, and there is no apparent difference in the point at which they become viscid on cooling. They show, however, certain marked differences by the nitric-acid test. Peach-kernel oil gives an almost white colour (with the slightest trace of darkening, but no brown), and, after standing four to six hours, separates into a very pale-yellow solid mass and nearly colourless liquid. The apricot-kernel oil darkens considerably, and separates into a brownish solid mass and a yellowish-brown liquid in about the same time. With oil pressed from almonds only the test shows the very palest yellow colouration and separation of the solid mass, practically indistinguishable from that afforded by the oil of peach-kernels.

It appears, therefore, that the wording of the B.P. test is not strictly accurate, although the non-compliance with it indicates admixture with apricot-kernel oil, at any rate.

Determination of Correct Melting-points.

By THOMAS TYRER and ALBERT LEVY.

In this paper we deal with the melting-points of acetanilide, phenacetin, phenazone, and sulphonal. The British Pharmacopœia is precise in regard to these, giving definite factors in each case, and a description (page 436) of the method of determining such factors; but our opinion is that the B.P. factors do not appear to have been determined by the B.P. method, but are obtained from foreign or other sources, and have doubtless been determined by one or other of the methods which we describe.

We have, at the same time, thought it advisable to determine the melting-points of the dried commercial and the purified substances, as well as of the commercial themselves, and we give the results of nearly 600 observations which may be useful in guiding those in authority to the selection of accurate data for substances suitable for medicinal use. The methods of examination which we have used are as follows:—

(1) The B.P. method, in which the substance is placed in a capillary tube of 1 mm., closed at one end, and, after attachment to the thermometer, heated in a beaker of water or other suitable liquid.

(2) Method described by Graebe, in which the substance is placed in a capillary tube attached, as usual, to thermometer, inserted in a test-tube containing sulphuric acid, which test-tube in turn is warmed by sulphuric acid heated in a small flask.

(3) Landolt's method (also recommended by Reissert). Here the substance being placed in a test-tube of 30 mm. bore, and 175 mm. length, this tube is surrounded by one of 40 mm. diameter, the whole being surrounded by a cylinder open at both ends and heated by a Bunsen burner so as to practically compose an air-bath. The inner tube is closed with a cork, through which a thermometer and glass stirrer pass. For protecting the outer glass from the direct flame a small disc of asbestos covered with wire is advantageous. Accurate results are obtained by this method, if the temperature is taken at the beginning and completion of melting and at the re-solidification point of the substance. The only objection to it is the comparatively large amount of substance required.

(4) M. Piccard's method. The substance is heated in a capillary tube, on the end of which is blown a bulb at an acute angle, and it is attached to the thermometer in the usual way. On heating, the air in the bulb expands and forces the substance up the capillary at the moment of melting, so that this point is easily seen. This method tends to give high results.

(5) Loewe's method (or Chrystomane's slightly modified), where a very small quantity of the substance to be tested prevents contact between platinum wire and mercury until the melting-point is reached. The mercury is heated, causing the substance to melt, which brings the platinum wire into contact with the mercury, completing a circuit in which is included an electric bell, which thus rings at the moment of melting. This method gives rather high results, as the substance must be entirely liquid before contact can be made.

Regarding the B.P. method, somewhat high results are obtained, as when the substance is melted the second time this is almost invariably observed. Graebe and Landolt methods agree fairly well. A remarkable difference was found when comparing the melting-points of the commercial articles—the same dried, and the same purified until two consecutive crystallisations showed the same melting-point.

As to correction for the thermometer, Rimbach states* that the corrections of Kopp, Holtzmann, and Thorpe give too low results if the exposed columns are long, and too high results if they are short. In fact, the difference between Thorpe and Holtzmann is more than 1° C. Again, it cannot be too strongly insisted on that the precautions advised by Reissert should be strictly followed out. The difference between the B.P. and other methods is due to the fact that the melting-point of the substance is taken on its being melted for the second time.

A fact often overlooked in melting-point determinations is that the thickness of the capillary tube's walls should be as near as possible the same as the thickness of the walls of the thermometer-bulb.

We now give epitomes of the results which we have obtained, the figures being the averages after correction by the five methods just noted, the differences between the corrections amounting to 0.25° C. on the highest and the lowest of the factors.†

Acetanilide.

Pharmacopœial Melting-points.—British 113.5°, United States 113°, German 113°, Dutch under 120°, Italian 112–113°, Japanese 113° C.

M.P. of Commercial.—By B.P. method 111.62°, G[raebe's] 111.13°, L[andolt's] 111.14°, P[iccard's] 111.52°, E[lectric] 111.58°. *Average of all* 111.36°.

M.P. Dried.—B.P. 112.48°, G. 112.08°, L. 112.25°, P. 112.78°, E. 112.61°. *Average of all* 112.42°.

M.P. Purified.—B.P. 113.78°, G. 113.19°, L. 113.25°, P. 113.62°, E. 113.65°. *Average of all* 113.49°.

Phenacetin.

Pharmacopœial Melting-points.—British and German 135° C. Not in others.

M.P. of Commercial.—B.P. 134.1°, G. 133.2°, L. 133.22°, P. 134.25°, E. 134.54°. *Average of all* 133.86°.

M.P. of Dried.—B.P. 134.91°, G. 133.25°, L. 133.83°, P. 134.5°, E. 135.08°. *Average of all* 134.31°.

M.P. of Purified.—B.P. 135.66°, G. 134.64°, L. 134.41°, P. 134.49°, E. 135.41°. *Average of all* 134.92°.

Phenazone.

Pharmacopœial Melting-points.—British 113°, German 113°, Dutch 110°, Italian 113°, Japanese 110° C. Not in U.S.P.

* Ber. 22 (1889), p. 3075.

† The authors have compiled two tables of correction for the emergent column and rapid calculation for the same, which they are to have printed in a week or two, and will supply to any chemist on application addressed to Mr. Tyrer, Stirling Chemical-works, Stratford, E.

* *Archiv. der Pharm.* 26, 1888, 857.

† *P.J.* iii. 16, 797.

M.P. of Commercial.—B.P. 109.52°, G. 108.62°, L. 108.87°, P. 109.17°, E. 109.59. *Average of all* 109.16.

M.P. of Dried.—B.P. 110.61°, G. 109.63°, L. 109.25°, P. 110.19°, E. 110.49°. *Average of all* 110.04°.

M.P. of Purified.—B.P. 113.14°, G. 112.83°, L. 112.49°, P. 112.91°, E. 113.03°. *Average of all* 112.88°.

Sulphonal.

Pharmacopœial Melting-points.—British 125.5°, German 125–126°. Not in others.

M.P. of Commercial.—B.P. 125.52°, G. 124.67°, L. 124.77°, P. 125.17°, E. 125.24°. *Average of all* 125.07.

M.P. of Dried.—B.P. 125.63°, G. 124.88°, L. 124.81°, P. 125.28°, E. 125.58°. *Average of all* 125.34°.

M.P. of Purified.—B.P. 125.57°, G. 124.82°, L. 124.73°, P. 125.35°, E. 125.84°. *Average of all* 125.26°.

These results show that the B.P. factors are too high for commercial acetanilide, phenacetin, and phenazone, the official factors apparently being based upon the chemically-pure or water-free products, which it would be exceedingly expensive, if not difficult, to supply. It is especially to be noted that commercial phenazone meets the Dutch and Japanese standards, but not the British and German—a fact which is probably the result of sound technical and commercial experience, and, therefore, to be taken into account by Pharmacopœia authorities. We are continuing these observations upon other B.P. substances, having stated melting-points, and may publish our results as opportunity offers. We have done similar work to the foregoing on the boiling-points of the B.P. liquids, which show equal discrepancies, and these results we also hope to publish. The work has been carried out in the research laboratories of the Stirling Chemical-works (T. Tyrer & Co., Limited).

Laboratory Notes.

By F. C. J. BIRD.

LIQUOR FERRI PERCHLORIDI FORTIS, B.P.

Most commercial samples of this liquor will be found to answer the official test of sp. gr. (about 1.42). Manufacturers generally have therefore relied on the sp. gr. as indicating agreement with the pharmacopœial standard of strength in ferric chloride, but, as has recently been shown, the official figures are not concordant, a liquor made strictly by the B.P. process being only capable of yielding a maximum of 1.44 gramme of Fe_2O_3 per 5 c.c. instead of the 1.6 gramme required. That 1.66 indicates the proportion of iron salt desired by the compilers may be inferred from the footnote to the formula that "100 c.c. contains 22.5 grammes of iron," and that 5 c.c. yields 1.6 gramme of ferric oxide. In the following parallel columns are given the calculated quantities of material contrasted with the amounts actually ordered in the Pharmacopœia, and it is suggested that when making this preparation the figures in the last column should be substituted for the corresponding official quantities in order to produce a liquor which will yield on analysis 1.6 gramme Fe_2O_3 per 5 c.c.

	Theoretical Amounts for 12½ fl. oz. Acid. Hydrochlor. B.P.	B.P. Amounts	Theoretical Amounts for 1.6 gramme Fe_2O_3 per 5 c.c.	Suggested Alterations in B.P. Quantities	
				Imperial	Metric
Iron	3.54 oz.	1 oz. (0.46 oz. excess)	3.992 oz.	4½ oz. (0.58 oz. excess)	90 gramme
Hydrochloric acid ...	12.5 fl. oz.	12.5 fl. oz.	13.89 fl. oz.	13 fl. oz. 428 min.	278 c.c. (0.2 c.c. excess)
Hydrochloric acid ... (to raise to ferric state)	6.25 fl. oz.	7 fl. oz. (0.75 fl. oz. excess)	6.945 fl. oz.	7 fl. oz. 5½ dr. (0.74 oz. excess)	154 c.c.
Hydrochloric acid ...	—	1 fl. oz.	—	1 fl. oz.	20 c.c.
Nitric acid (to raise to ferric state)	1.335 fl. oz.	1.5 fl. oz. (0.165 fl. oz. excess)	1.48 fl. oz.	1 fl. oz. 5 dr. (0.145 fl. oz. excess)	32.5 c.c.

The point at which evaporation may be considered to have proceeded far enough for the complete removal of nitrous compounds is usually marked by the appearance of a pellicle on the surface of the liquid rather than by a precipitate commencing to form as described in the B.P.; and as the extent

to which evaporation is carried may vary under different conditions, more or less free hydrochloric acid remaining in the solution, the advisability of stating an approximate sp. gr. (e.g., about 1.42) becomes apparent.

A sample of liquor ferri perchlor. fort. made according to the directions of the Pharmacopœia, but using the metric quantities suggested in the last column of the table, had a sp. gr. of 1.488 at 15.5° C., and on analysis yielded 1.604 gramme ferric oxide per 5 c.c.

MISCIBLE LIQUID EXTRACT OF IPECACUANHA.

The B.P. liquid extract of ipecacuanha has the minor defect of precipitating when diluted with weak alcoholic or aqueous liquids. There have been no published statements as to the nature of the deposit, which in the official formula for the wine is directed to be filtered out, but if the wine be not free from astringent matters the sediment will certainly contain a little alkaloid. A liquid extract not forming a precipitate on dilution would therefore not only save filtration, but, what is often of greater importance, avoid the forty-eight hours' delay incidental to the preparation of vinum ipecacuanhæ by the present B.P. formula. Amongst the known constituents of ipecacuanha are pecten, waxy bodies, dextrin, mucilage, albuminous substances, starch (in large proportion), colouring-matter, resins, and sugar, besides alkaloids and vegetable acids. The resins of ipecacuanha, which are most likely to constitute a part of the deposit, have never been credited with either emetic, diaphoretic, or expectorant affect, and their entire or partial removal can hardly affect the medicinal action of any preparation of the drug, so that the following process for rendering the official liquid extract "miscible" is on correct lines:—

Liquid extract of ipecacuanha B.P. 1,000 c.c.
Distilled water 1,000 c.c.

Mix and allow to stand in a cool place for twenty-four hours. Filter, and wash the residue on the filter-paper with a little distilled water until colourless, keeping the washings separate. Acidify the filtrate with acetic acid q.s. to a very faint acid reaction. Distil by the heat of a water-bath until the distillate (as shown by volume and sp. gr.) contains 400 c.c. absolute alcohol. This will generally measure about 520 c.c. Reserve this portion of the distillate, and continue the distillation to recover remaining alcohol. Evaporate the residue on the water-bath to about 420 c.c., allow to cool, and pour off the bright liquid from any slight deposit of oily or resinous matter adherent to the dish. Add this to the reserved distillate. Rinse the dish with the washings obtained in the first part of the process, filter if necessary, and evaporate sufficiently to make the total volume of the preparation equal 1,000 c.c.

The finished product of the above formula gives a bright mixture with detannated wine, yields from 2 to 2.25 per cent. alkaloid by the B.P. method of assay, and compares favourably in point of aroma with the original preparation.

GLYCEROLE OF IPECACUANHA

may be prepared by a similar method, viz.:—

Liquid extract of ipecacuanha ... 1,000 c.c.
Distilled water 1,000 c.c.

Mix as before, allow to stand, filter, and wash the residue,

evaporating the washings separately. Acidify filtrate with acetic acid to a very faint acid reaction, distil off the alcohol, and evaporate on a water-bath (adding the evaporated washings towards the end) to 500 c.c. Add—
Glycerin 500 c.c.

This also forms a clear solution with detannated wine, syrups, or aqueous liquids. It contains the B.P. proportion of alkaloid, and for many obvious purposes furnishes a convenient preparation of ipecacuanha.

An alternative process for the direct preparation of miscible liquid extract of ipecacuanha was also tried and found to work well. It is as follows:—

Ipecacuanha-root (in powder) ...	No. 120	2,250 grammes
Calcium hydroxide ...	...	325 grammes
Alcohol (90-per-cent.) ...	...	a sufficiency

Pack the powdered ipecacuanha-root lightly but uniformly in a conical percolator; add successive portions of 400 c.c. of the alcohol at intervals of twelve hours until the liquid begins to drop from the percolator. Close the lower orifice, and set aside for twenty-four hours. Then percolate slowly until 700 c.c. has been collected. Continue the process as detailed in the Pharmacopœia; recover the alcohol from the remaining percolates; evaporate on a water-bath to a soft extract, dissolve in the reserved portion, and assay by B.P. method. Finally, dilute with alcohol (90-per-cent.) to a volume that shall contain 5 grammes of the alkaloid in 100 c.c. Then take—

Liquid extract of ipecacuanha (5 per cent.) ...	900 c.c.
Distilled water ...	1,100 c.c.

Mix, set aside for twenty-four hours in a cool place, and filter. Wash the filter with sufficient distilled water to produce 2,000 c.c.

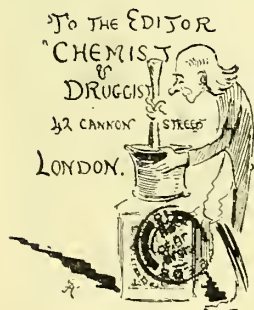
Ipecacuanha, when percolated with rectified spirit, can be used in the very finest powder, complete extraction of the alkaloid when coarse powder is employed being very tedious. By pouring the menstruum directly on the drug in a dry state, without previous moistening, as recommended above, and using the ipecacuanha in very fine powder, an intensely strong reserve percolate collects in the receiver. Even an alcohol as dilute as 20-per-cent will successfully percolate ipecacuanha in No. 120 powder provided the drug be first uniformly mixed with an equal weight of dry sand. The 5-per-cent liquid extract can also be made by re-percolation, but the process just described is preferable.

The paper also contains brief reference to some experiments made with the view of determining the solvent power of various alcoholic menstrua on No. 120 ipecacuanha powder, and these showed that a 90-per-cent. alcohol tincture (1 in 3) contained 0.6 per cent. of alkaloid; 70-per-cent., the same; 60-per-cent., 0.63; 45-per-cent., 0.6; and 20-per-cent., 0.64.

A Rejected Communication.

The Law Courts, Plymouth.

(Date as on Postmark.)



SIR,—In the name of all that is good and true in pharmacy (it isn't much) I protest against the treatment which this B.P. Confounded thing has given me. I came down here from my residence in (see postmark) with an entirely new and original method for expediting the proceedings of the B.P.C., &c. It is a mechanical arrangement upon which the members of the B.P.C., as well as those who have not paid their three half-crowns, but nevertheless

indulge in all the luxuries which the Plymouth hotels and chemists supply—(where was I? Yes)—an arrangement by which you take the members (paid up and otherwise), string them together like sponges, and dip them first thing in the morning in a liquid extract of the papers, and after gentle rotation on the Cocks coater polish them with the presidential address. "A most painful process," said a gentleman from Southwark Street. "I would not submit to it for a world's ransom," said his assistant. "Don't try," I implored, "to put a hitch in my suggestion before you hear more of it. After the members are polished you set them out in a row—well, a

dozen rows if you like—and show them my living pictures. Here's the latest, and it's a fact. See! Distinguished pharma-

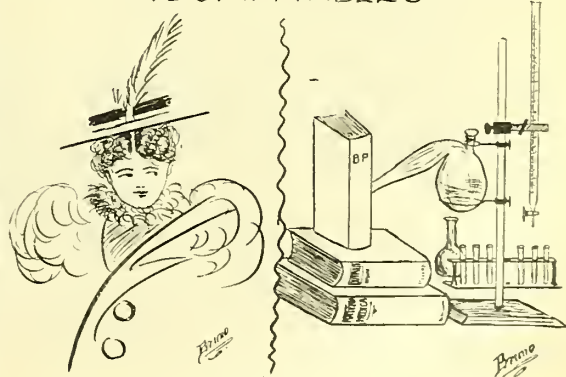


cist, member of the Conference; Customer, er—er—not distinguished—rushes in excited (fine effect on the screen!)—'Kid's deen', an' ter docter says I was ter ax yer for ox-ey-gin, Quick.'—You think that's not funny enough? How would this do, then?—



Or, here is a sweet little thing which a friend of mine——"

INCOMPATIBLES

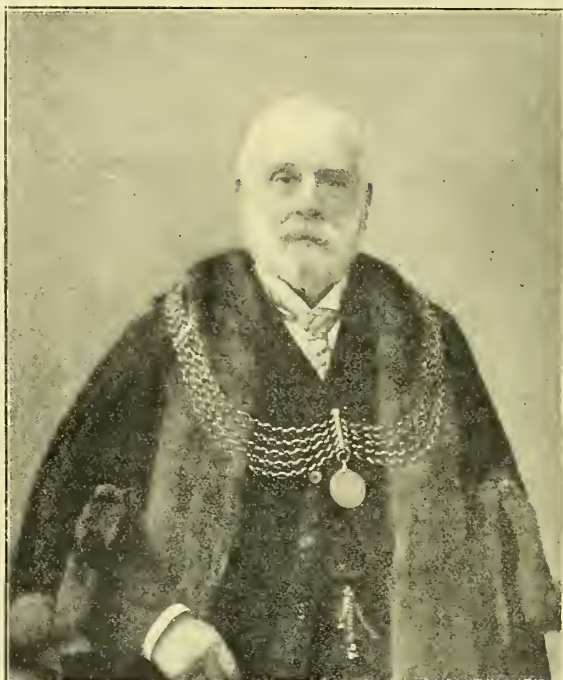


FRIENDLY ADVICE TO MINOR STUDENTS.

They hustled me out of the room before I could get further, telling me to go along the street to Federation Hall, and there they referred me to you. Have I a case against them? Please answer in your legal column *this week*.

Yours faithfully,
AN OLD SUBSCRIBER.

A Portrait of
Mr. Alderman Pethick, J.P.,
Mayor of Plymouth,
from a photograph by
Heath, Plymouth.



The Mayor welcomed the
Conference to Plymouth on
Tuesday morning, and has
issued invitations for a
Garden Party at his
country residence, Down
House, Yelverton, on
Friday, July 28.

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13 14

THE PLYMOUTH EXECUTIVE.

- | | | | |
|------------------------|------------------------|-----------------------|--------------------------|
| 1. Mr. P. A. Kelly | 5. Mr. C. T. Weary | 9. Mr. J. Davy Turney | 12. Mr. Geo. Breeze |
| 2. Mr. F. Maitland | 6. Mr. A. D. Breeze | 10. Mr. C. J. Park | 13. Mr. J. Maurice |
| 3. Mr. W. H. Woods | 7. Mr. J. Barge | 11. Mr. J. Cocks | 14. Mr. J. Harvey Bailey |
| 4. Mr. Freeman W. Hunt | 8. Mr. W. Condry U'ren | | |

THE CONFERENCE PROCEEDINGS.

Welcome by Two Mayors.

Reports and Presidential Address Vote.

Abstracts of the Papers.

Discussions begin with a heated rejoinder by the Editor of the *British Pharmacopœia* to Criticism of its Incomplete Methods.

First Session, Tuesday Morning.

THE *venue* of the Conference turned out to be the conveniently-arranged Registrar's Court in the Western Law-Courts. The President (Mr. J. C. C. Payne) arrived at 10.10 A.M., by which time the members had fairly well filled the benches in the body of the court. The ladies were accommodated in the galleries which run along the sides, and had the advantage of taking in the whole scene at a glance. The Guildhall buildings form a very fine group in the centre of the city, the Western Law-Courts being situated on the right-hand side of the block. The Institute of Mechanical Engineers were in session under the same roof in the Great Hall.

The PRESIDENT, who was greeted with applause, called upon the Hon. Secretary (Mr. W. A. H. Naylor) to read the letters of apology which had been received. Those who had written included Mr. Martindale, Mr. R. J. Downes, Mr. Walter Hills, Mr. J. C. Umney, Mr. John Moss, Mr. Newsholme, Mr. C. Umney, Mr. Wright (Buxton), and Mr. Siebold.

The PRESIDENT said he had also received letters from Mr. Martindale, in which he regretted that, owing to the exceptionally heavy examinations, he was too busy to leave London, and from Mr. Downes, in which he said he was extremely sorry to miss the Conference, but that he had had the misfortune to fall and break a limb.

Mr. NAYLOR then read the

LIST OF DELEGATES TO THE PLYMOUTH MEETING.

It includes the names of several persons who were not present:—

Pharmaceutical Society of Great Britain.—Messrs. W. Martindale (President), G. T. W. Newsholme (Vice-President), S. R. Atkins (Treasurer), W. G. Cross, W. S. Glyn-Jones, N. M. Grose, J. F. Harrington, Walter Hills, C. J. Park, C. Symes, W. Warren, and R. Bremridge.

Pharmaceutical Society of Ireland.—Messrs. R. J. Downes (President), G. D. Beggs (Vice-President), W. F. Wells, jun., P. Kelly, and Professor C. R. Tichborne.

Pharmaceutical Society of Great Britain (North British Branch).—Messrs. J. Rutherford Hill, William Burley, Peter Boa (Chairman), Robert McAdam (Vice-Chairman), John Bowman, David McLaren, W. L. Currie, W. B. Cowie.

Chemists' and Druggists' Society of Ireland (North Branch).—Messrs. Samuel Gibson and W. J. Rankin (Hon. Sec.).

Bristol Pharmaceutical Association.—Messrs. G. T. Turner (President) and B. Keen (Hon. Sec.).

Cambridge Pharmaceutical Association.—Mr. E. Saville Peck. Exeter Association of Chemists and Druggists.—Messrs. P. F. Rowsell (President), Henry Gadd, J. Hinton Lake, and H. Wippell Gadd (Hon. Sec.).

Edinburgh Chemists', Assistants', and Apprentices' Association.—Messrs. David McLaren, W. B. Cowie, and J. Rutherford Hill. Forfarshire and District Chemists' Association.—Messrs. D. Ferrier and A. Naysmith.

Leeds Chemists' Association.—Mr. F. W. Branson.

Liverpool Chemists' Association.—Messrs. John Bain (Vice-President), A. S. Buck, R. C. Cowley, E. Evans, jun., John Smith, C. Symes, T. H. Wardleworth (Hon. Sec.), and J. Herbert Evans.

Manchester Pharmaceutical Association.—Messrs. C. A. Johnstone and A. J. Pidd.

Newcastle-on-Tyne and District Chemists' Association.—Messrs. F. E. Schofield (President), Geo. Foggan, G. F. Merson, and F. Gilderdale (Hon. Sec.).

Sheffield Pharmaceutical and Chemical Society.—Mr. G. T. W. Newsholme.

Swansea and District Chemists' Association.—Messrs. N. M. Grose and J. Hughes.

Ulster Pharmaceutical Association.—Messrs. J. W. Nichols, J. C. C. Payne, R. W. McKnight, and Jas. Tate.

Bradford Chemists' Association.—Mr. R. Wilson.

Oxford Chemists' Association.—Messrs. Matthew and Druce.

Midland Counties Chemists' Association.—Mr. Gerrard.

Western Chemists' Association of London.—Messrs. Matthews and Harrington.

Leicester Chemists' Association.—Messrs. T. Howard Lloyd, Lewis Ough, and Butler.

Wigan Chemists' Association.—Messrs. Johnson and Phillips.

Tunbridge Wells Chemists' Association.—Mr. Hobbs.

N.-E. Lancashire Chemists' Association.—Messrs. Shorrocks and Gifford.

Mr. F. RANSOM then read the

REPORT OF THE EXECUTIVE COMMITTEE.

In presenting the thirty-sixth annual report your Committee recognises that the Conference continues to fulfil the objects for which it was established, and believes that there is no diminution in the interest taken in its work. The question of membership, which has been repeatedly referred to in these reports, continues, however, to be a source of some anxiety.

During the past year 74 candidates have been elected, while 16 members have resigned, 10 have been removed by death, and 23 names have been erased owing to the subscriptions being four years in arrear, thus showing a net increase of 25. The number now on the list is 1,302, but of these the subscriptions of 360 are in arrear, thus rendering our financial position most unsatisfactory. In order to obtain new members and prevent the annual loss caused by resignations and arrears of subscriptions, a sub-committee was appointed in December last year to devise some method by which this object could be attained. This sub-committee carefully considered various suggestions, and finally reported that it considered the best plan to adopt would be the appointment of direct representatives in various districts throughout the country, who, by their personal influence and interest in the Conference, might be able to obtain nominees for membership by putting before them the advantages to be obtained from such association. It was felt that it would be necessary to apply some distinctive title to the members so appointed, and the name suggested for such honorary appointment was "Local Corresponding Secretary." The report of the sub-committee was adopted by your Executive, and as a result thirty-two appointments have been made of gentlemen who were willing to undertake the duties in important centres. There remain other populous districts throughout the kingdom which are at present unrepresented, and it is hoped that offers to serve in this capacity will be made by members who are resident in such districts.

Since the last general meeting the following gentlemen have been elected honorary members of the Conference:—Dr. Chas. Rice, New York; M. A. Petit, Paris; and Professor A. Tschirch, Berne. The Committee regret that, owing to his departure from India, Mr. J. G. Prebble has found it necessary to resign his position as Hon. Colonial Secretary for Bengal; the vacancy thus occasioned has not yet been filled. The Blue List has, as usual, been revised by a sub-committee appointed for the purpose, and various additions and alterations have been made.

No applications for grants in aid of research-work have been received during the year. Mr. Louis Siebold, F.I.C., F.C.S., has been reappointed Editor of the *Year-book*, and the MS. of Parts 1 to 3 of the forthcoming volume is already in the press.

By the death of Mr. J. Bosisto, C.M.G., Melbourne, the Conference has lost a distinguished member, who showed his appreciation of the work done by the Association and assisted in furthering its interests by contributing valuable papers to its annual

meetings. As an authority on Australian drugs and the products of the eucalypti he for many years occupied a foremost position.

Copies of the

FINANCIAL STATEMENT

were circulated in the room. It showed that the balance in hand on July 1, 1898, was 35*l.* 11*s.* 8*d.*, and the income for the year was made up of members' subscriptions, 356*l.* 14*s.* 6*d.*; sales of *Year-book*, 24*l.* 13*s.* 4*d.*; and received from advertisements 66*l.* 0*s.* 9*d.* From the credit side of the account it appears that the expenses of the *Year-book* amounted to 389*l.* 10*s.* 1*d.* The Assistant-Secretary's salary (55*l.*), printing and postage of Blue Lists (5*l.* 14*s.* 6*d.*), grant for research (5*l.*), postages, printing, stationery, and petty cash (28*l.* 6*s.* 9*d.*), are some of the other items. The Secretary has also 1*l.* 5*s.* 3*d.* in hand in cash and 104*l.* 18*s.* 8*d.* at the bank wherewith to discharge liabilities 118*l.* 7*s.* 4*d.*

The Bell and Hills Fund of 360*l.* yielded 9*l.* 11*s.* 8*d.* interest, the Belfast books cost 9*l.* 3*s.* 11*d.*, and a balance of 18*l.* 13*s.* 6*d.* remains in the bank.

Mr. W. A. H. NAYLOB, who read the statement in the absence of the Treasurer (Mr. J. C. Umney), pointed out that this year's one differed from that of last year by the fact that they had an adverse balance, amounting to something like 26*l.* That was rather a large item, and might be partly accounted for by the reduction in the amount for advertisements. Last year the receipts from this source amounted to something like 82*l.*, and this year's sum was by far the lowest that the Conference had had to report for this item. Unfortunately there was another item which was very low—members' subscriptions—and that was one which they could all help largely to increase. He hoped that next year they would take care that this item was considerably increased instead of decreased. The subscriptions for the year amounted to 352*l.* 19*s.* 6*d.*, which was a decrease of about 30*l.*

Mr. BRANSON moved the reception and adoption of the report and financial statement, and remarked that the one point to emphasise was that an appeal had been made to their very large constituency for increase in membership. He felt sure that such an appeal would not be made in vain, and that an adequate response would result.

Mr. LONGTON having seconded,

The PRESIDENT said sometimes pharmacists overlooked little things, and one of these little things was the payment of the annual subscriptions. It would be a great assistance to the Secretaries and Treasurer if members would remember that the annual subscriptions should be paid when due. The report and financial statement were adopted.

The report of the

FORMULARY COMMITTEE

was then read. It was as follows:—"During the year the members of the Formulary Committee, as the result of inter-communication by correspondence, have suggested a provisional list of important preparations to take the place of those that must necessarily be omitted from the next issue of the Unofficial Formulary owing to their absorption by the present British Pharmacopœia. They have also suggested certain modifications of formulæ that remain unappropriated. Your committee has concluded that it would be unwise to do more until the drugs and preparations to be included in the proposed Indian and Colonial Addendum of the British Pharmacopœia have been agreed upon."

The PRESIDENT expressed regret that Mr. Martindale was obliged to withdraw from the chairmanship of the committee. He moved the adoption of the report. The motion was carried.

THE MAYOR ARRIVES.

At this juncture the Mayor of Plymouth (Alderman J. Pethick), who was accompanied by the Mayor of Devonport (Mr. W. Hornbrook), and the Chairman of the Stonehouse District Council (Mr. J. E. Bone), arrived, and was cordially received on entering the Conference Chamber. He said it gave him the very greatest pleasure to welcome them to their historic town of Plymouth and locality. He had just left one institution—the Mechanical Engineers'—and others still appeared to come, but there was none whom he was more pleased to welcome than the British Pharmaceutical Conference. (Applause.) He hoped their visit would prove a very enjoyable one, and as they had commenced the pro-

ceedings with very fine weather, he hoped it would continue for their benefit and pleasure. (Applause.) He also hoped they would take the opportunity of thoroughly investigating their lovely district, the Metropolis of the West, situated at the end of Devon and commencement of Cornwall. They hoped to see many members there in the future, and that when they returned to their homes they would be able to say they had enjoyed their visit, and to inform their friends who were intending to take a holiday that they would not find a more beneficial or picturesque place than that part of Devon. There were lovely rivers in the district—the Tamar, Dart, and Yealm—which all would look upon with pleasure. He repeated his hope that the members of the Conference would be thoroughly pleased with their visit, and that residents would not require much of their physic. (Laughter and applause.)

The PRESIDENT said Plymouth seemed to be in the rather peculiar position of having three Mayors, and the Mayor of Devonport desired to offer a few words of welcome.

The MAYOR of DEVONPORT said it was a veritable fact that there was a unity in trinity and a trinity in unity in the Three Towns. (Laughter.) They were looking forward with considerable expectation to the time when Plymouth would throw out her arms to Devonport and ask to be received as part of the borough—(laughter)—because in the near future Devonport would undoubtedly have the greatest arsenal in the world, and Plymouth might very naturally seek shelter and protection. (Laughter.) With Devonport would be all the facilities for offering that protection which she had needed in the past, and possibly might need again. (Applause.) He joined the Mayor of Plymouth in giving them the heartiest possible welcome to the Metropolis of the West. They would forgive their pride of the beauty of the neighbourhood and of the county. He was vain enough to believe that of all the counties Devon was the most beautiful and romantic, the richest in historic beauty, in poetic suggestion, and in the charm of moors and rivers. (Hear, hear.) They had even a big prison for their accommodation. (Laughter.) The representatives of the Three Towns welcomed members of the Conference as the representatives of one particular branch of scientific research. He had just been addressing another scientific body, whose members had done much to unfold the mysteries of the universe. The members of the Conference were engaged in rendering a similar service. To them was committed the great task of benefiting the world in their particular line, and he was sure they had rendered great service; but there was still a great deal to be done. (Hear, hear.) Science was making herself somewhat interesting to them; she had begun and would continue to unfold to view more of her world. To those present would be given the power to cause the laws and the forces of nature to be subject to the power and will of man, so that mankind might be exalted in consequence. They would have the power of utilising even the forces of the mighty storm; to them would be given to command even the mysteries of the ocean-bed to be delivered up to them. As the result of their scientific research diseases that afflicted humanity would to some extent be lessened, and suffering would be ameliorated. He hoped they would carry away many pleasant associations of their visit. (Applause.)

Mr. J. E. BONE said it gave him the greatest delight to support the Mayor of Plymouth in welcoming the Conference. He looked on Plymouth as the huge body and Devonport as the headpiece; and where would the body and headpiece be but for the neck? Stonehouse was the neck which held the two together. (Laughter.) The beauties of Devon were unsurpassed, and near Stonehouse was the beautiful Mount Edgcumbe.

Dr. J. H. S. MAY explained the absence of Mr. Bulteel, President of the Plymouth Medical Society, and of Dr. Kingston, the senior Vice-President, and said that, as the next Vice-President in rotation, it was his pleasing duty to fill the gap. Medical men recognised the value of annual conferences of members of various callings and professions, and had one themselves. It was an extremely happy occasion when the late Mr. Jacob Bell, in 1841, with the assistance of, and after consultation with, his friends, instituted the great Pharmaceutical Society of Great Britain. It was a great scientific advance and a step in the right direction, and one fraught with great advantage, not only to their

calling, but the one to which he had the honour to belong. That the dispensing of drugs should be in the hands of scientific and well-educated men went without saying, and it was an immense improvement when the change was effected from the old-fashioned way of dispensing. (Hear, hear.) It was also an advantage to the medical profession that there was amongst them a growing tendency, and a proper one, that they should avoid the details of dispensing work, and leave it in the hands of more scientific men. (Applause.) That was a delightful neighbourhood, and the barometer was rising and the sun shining. When they had got through the dry details of their Conference, they would have an opportunity of appreciating many of the beauties of the district, and some of the great works in progress in their midst. In the name of the medical profession he bade them a very cordial and hearty welcome. (Applause.)

OUR ONLY ORATOR RESPONDS.

Mr. S. R. ATKINS tendered to the Mayors of Plymouth and Devonport, the Chairman of the Stonehouse District Council, and the Vice-President of the Medical Society their heartiest and most enthusiastic gratitude for their welcomes. Some of them knew the charms of the county. He was born in the adjoining county, and twenty-two years ago he was there when the late Professor Redwood was present. Then he saw much of the beauty of Devonshire, and had frequently visited it in the course of a long life. He believed it was a somewhat unique occasion, if not a record, that a Mayor should so early in the morning be called to welcome two bodies in that historic town. While thanking these dignitaries for their welcomes and for the buildings placed at their disposal, they hoped to be honoured with the presence of those gentlemen at their gatherings, and if pressure of work prevented their own attendance, as to their wives, sons, and daughters they would say, "Let 'em all come." (Laughter and applause.) Things perished and came and went in this world, but he believed that the one thing that would stand and grow in England, and acquire an increasing influence, were the great municipal institutions. (Applause.)

The MAYOR OF PLYMOUTH expressed his gratitude for the kindly expressions, and, referring to the remarks of Mr. Atkins, said he had always been an early riser, and found it beneficial. He hoped to see them at his little home at Yelverton on Friday, and his sons and sister and all his family would do their best to give them a downright hearty Devonshire welcome.

THE PRESIDENTIAL ADDRESS

was then read. It is printed on page 197.

Mr. A. P. BALKWILL (Plymouth), on behalf of the Conference, heartily thanked the President for his address. There were many subjects that might present themselves for such an occasion, but none was more important than that with which the President had dealt. He was a lover of history, and a believer in history. He felt that that day's gathering was making history, and he trusted that the history that was being made would be worthy of the past. (Applause.) They welcomed Mr. Payne to Plymouth for the second time in connection with the Pharmaceutical Conference, having cordial remembrance of the pleasure of the visit twenty-two years ago. He felt that Great Britain and Ireland might well be brought into closer bonds, and should be united on this and many other subjects. He would like to refer to one remark in the President's address, and that was the observation that he was not versed in the ways of Westminster. He would be very glad if he were versed in those ways. He was very sorry pharmacy was not versed in the ways of Westminster, and had not its representatives there. The medical profession was largely represented; and their division of labour was as important a department in the work and knowledge of medicine, and as important and abstruse, as any in connection with therapeutics, which was one of the most inexact sciences in the world. It was a cruel shame that, instead of pharmacy being assisted by the Government of the country, the Government thought that the pharmacist was the man of all others who had a right to be harassed in every way. (Applause.) They could be harassed by stamp-duties, and by examination of weights and measures by men who knew nothing about it, and who got fees they would be glad to put into their own pockets.

If they were only represented, as they once were, by one man in Parliament, they might have some better hope for the future. Pharmacy was indebted largely to Ireland in many respects, and he rejoiced in having in Mr. Payne a representative of Ireland. There was a great deal said in the present day as to the advance of knowledge, and knowledge had enormously advanced in that they stood on the heads of their fathers. They started where these left off, and therefore got further on. But as to there being greater athletes in science than in past days, he was among the sceptics. (Hear, hear.) He did not recognise this in any other branches of literature and knowledge, and he did not recognise it in pharmacy. They had only to go and see in the adjoining building the memorial of a pharmacist in that town a century and a-half ago to witness the position which pharmacy took in the early part of the last century; and he trusted it would be a stimulus to the young men there that there had been fine men in the past, who were beckoning to them to follow in the lines they had taken. Mr. Payne had always been an encourager of the young men of the Society, and he would be glad to say a word for their encouragement. His ambition in life had been to be connected with the forlorn hope, and if there was a forlorn hope in England, he believed it was their profession. (Laughter.) It was a great satisfaction to him to know he was connected with a profession that gave to the public a great deal more than it received. (Applause.) They did not seek the fees which would make their profession a success pecuniarily; and every young man coming into the work should come into it with an enthusiasm and love of the work for its own sake, otherwise he would find it a dreary drudgery from early morning to late at night. If he went into the work with enthusiasm, he went on and his youth was renewed; he was as fresh one day as on the day before; and he went on, as he (the speaker) found himself going, to second childhood, and enjoying that second childhood as much as he ever enjoyed the first. He intended these remarks as an encouragement to those whose first childhood was not far back, and who had this world before them and its history to make. (Applause.)

Mr. J. DAVY TURNER (Local Secretary) seconded the vote of thanks. No one was more fitted to deliver such an address. He felt that the Conference last year must have quickened an interest in and a desire to know more about Irish pharmacy, and the President had given them a clear history of the troubles and difficulties of the pharmacists of the country. (Applause.)

Professor ATFIELD, putting the vote of thanks, as the senior Vice-President who had been President of that body, remarked that when he was President he was the eleventh living, and now he was only the third. It was particularly appropriate that Mr. Payne should give a history of Irish pharmacy in Plymouth, seeing that twenty-two years ago the President of that day, his dear old teacher and afterwards colleague, Professor Redwood, gave them a history of pharmacy in Great Britain. No one from Ireland could better do this than Mr. Payne, because he was in the peculiar position of being an Irish pharmacist, but not an Irishman born, and therefore somewhat of an outsider, and one of those who saw the best of the game. He believed Mr. Payne was a West of England man—(applause)—and it might be on that account that he found such a harmonious response to all he had uttered. Of course, the closer pharmacy could be brought as between England, Scotland, Wales, and Ireland, the better for everybody—the better, of course, for pharmacy and pharmacists, the better for medical men and medicine, and the better for those for whom pharmacists and medical men existed—the public generally. (Applause.) It was well in all respects that Ireland and Great Britain should be brought closer together. We were to have a tunnel sooner or later, and various other means were to be devised for joining the two countries. There were others there who were present twenty-two years ago—Mr. Gerrard, Dr. Paul, and Dr. Symes—and they were delighted to come there and meet again men whom they met in those times. There were also Mr. Balkwill, Mr. Breeze, and Messrs. Turney. Twenty-two years ago Mr. Turney, sen., was doing the work his son was doing to-day. He was gratified to see a larger number of sisters, as well as brethren, than they saw in 1877. The motion having been enthusiastically carried,

The PRESIDENT said he was extremely obliged for the kind way in which the vote of thanks had been received. It gave him great satisfaction to know that they had been satisfied with what he had read to them, and to have the opportunity of letting them know something about Ireland. He thought it would be the subject they knew the least about, for Englishmen and Scotchmen apparently knew little about the sister country. They talked about the sister country, but did not go to see the sister very often. (Laughter.) He hoped they would go more frequently. As to the ways of Westminster, he agreed that the time had come when pharmacists as a body in Great Britain and Ireland should at least have one representative in Parliament. (Applause.)

It was now 12 o'clock, and, the ladies having retired, the members settled down to the work of hearing and discussing the papers, the first three on the programme were taken together, Mr. FARR reading an abstract of the first, and Mr. NAYLOR giving abstracts of the other two.

Ipecacuanha.

Messrs. Farr and Wright, in their paper entitled "*The Assay of the Official Liquid Extract, Wine, and Vinegar of Ipecacuanha*," corroborated Wilson's observations that the B.P. method of assay does not yield accurate results, besides being very tedious. But they find that even by Wilson's improved method the alkaloidal residues contain matter which is not alkaloid. Their method of assay is to take 5 c.c. of fluid extract, acidify it with 10 drops of dilute sulphuric acid, mix with 5 c.c. of water, evaporate the whole to 3 c.c., extract resin from it by means of chloroform; then treat the aqueous liquor with ammonia and chloroform, whereby a comparatively pure alkaloidal residue is obtained, and the alkaloids in this are determined by titration with standardised hydrochloric acid and caustic soda. They obtain close agreement between the weighed amounts and the titrated, whereas by the B.P. method and Wilson's there is considerable divergence (page 201).

Messrs. Naylor and Bryant also submitted an elaborate communication on the same subject, their conclusions in regard to the B.P. and Wilson's processes being practically the same as Farr and Wright's, and they submitted an assay process similar to the latter observers'; but their paper contained many additional details and fully described the lime-process and the kieselguhr-process, giving comparative results of distinct value (page 202).

Messrs. J. C. Unney and R. S. Swinton communicated a note on Johore ipecacuanha. They have analysed a sample from the recent importation of this drug from Singapore, and find that it contains somewhat less total alkaloids than Rio ipecacuanha, their yield being 1.7 per cent. These consist of emetine, 1.24 per cent.; cephaeline, 0.39 per cent.; and an unknown alkaloid (probably Paul and Cownley's), 0.07 per cent. The drug, being as good as Rio ipecacuanha, may be used for official purposes (page 203).

The discussion was opened by the PRESIDENT calling upon Dr. ATTFIELD, who led off the debate with a vigorous defence of the Pharmacopœia. He said he fully realised from an official point of view that they were much indebted to the authors for their suggestions for improvement in the B.P. processes, and he could fully endorse, from his own knowledge and from what had been heard from these very competent pharmacists, that other processes evidently less wasteful and altogether improved could be adopted. But from his own point of view he protested against the language used by the authors of the first two papers against the Pharmacopœia processes. They were told that these processes possessed every fault imaginable—in fact, that "it was impossible to think of more wasteful or tedious methods," that they "caused widespread dissatisfaction, were prodigal of time and in wastefulness of alkaloids." He did not say that the spirit of the words was incorrect, for he had already admitted that the knowledge gained was most useful, but he objected to the form of language, and said unquestionably that any such expressions were much better omitted altogether. It was certainly a very bad compliment to those Pharmacopœia-makers who had gone before. There seemed to be an impression that at the back of the Pharmacopœia there were those who tested all the processes submitted, refusing the good suggestions and publishing the bad ones. He agreed that such an arrangement as that of thoroughly and completely testing every process by the Pharmacopœia compounders would be an admirable thing if it could be done. But such a thing was impossible. It would take twenty years of time, 20,000% in money. The

compilers of the Pharmacopœia could only take care that no good work should be omitted from it, and if many excellent processes were discovered after the book had been issued, he did not see why the Pharmacopœia should be blamed for that. The process of Unney and Braithwaite which had just been so severely condemned gave, at least, a process, and surely they deserved credit for that. Would such strong words be used of the inventor of the locomotive? He had heard the first locomotive condemned, but at the same time the man who produced it was praised. The B.P. process for the assay of ipecacuanha extract gave very fair results, but it will be improved upon, and he hoped that before another Pharmacopœia was produced improvements might be made in the suggestions they had heard that day, and the present authors would be liable to the same condemnation as they had meted out to the B.P. "*The Pharmacopœia*," perorated the Professor eloquently, "is a casket of natural gems, more or less well polished by various workers. These gems are more or less well set by various other workers. But, above all, pharmacists should remember that the Pharmacopœia is not a stuffed sack on which to practise pugilism." (Laughter and applause.)

Mr. BIRD said the useful paper by Messrs. Farr and Wright had made several puzzles clearer to him. In making an assay of liquid extract of ipecacuanha by the Paul and Cownley method recently, he found that he could only obtain from 1.6 to 1.7 per cent. of total alkaloids. This he had put down to decomposition by evaporation, but, evidently, from what Mr. Farr had said, the loss was due to impurities. He thought Mr. Naylor was rather severe on the B.P. process, as he had found that, with care, it worked very easily and accurately. He asked Mr. Farr whether he had had a peculiar experience with the colour-reactions, and whether he had found any fairly constant factor by which the B.P. process might be gauged.

Mr. JONES (Coventry) said unless they had a factor for the improved processes not much use could be made of them. The titration method was theoretically good, but it had yet to be proved how far it showed the total alkaloid. He thought he had established pretty clearly at the Aberdeen Conference that mixed alkaloids could not be evaporated without working some change in them, and without loss of weight. Another point was in the examination of trade samples: sometimes they were found to be not what they should be. The question was as to whether the deficiency was due to want of care in the preparation, or how far the alkaloids would keep in the liquid extract. He suggested this as a line for someone to work on.

Mr. RUTHERFORD HILL, in connection with the keeping of liquid extracts, had a case brought recently under his notice in which a standardised extract, after being kept for some months, lost 25 per cent. of the total alkaloids. Precipitation began very soon in ipecacuanha-wine, and whether the wine retained the percentage of alkaloids or not after keeping was, he thought, an important point to settle.

Mr. HOLMES thought the Pharmacopœia had been somewhat unjustly criticised. The information sent in was utilised as far as possible, and the Committee should not be blamed for not using information which it did not have. The principal thing for them to think of was, in the event of a chemist being prosecuted, Was the offence to be judged by the Pharmacopœia as a standard, or by the processes of more recent date? With regard to Johore ipecacuanha, some doubt existed at first as to whether it was genuine ipecac. or not. It was undoubtedly a genuine cultivated ipecacuanha from Brazilian sources. The Cartagena variety contained more cephaeline, but in the Johore variety the third alkaloid was more abundant. Of this third alkaloid nothing was known, and here was a chance for research. It would be interesting to ascertain to what this preponderance of alkaloid was due, and in what proportion it existed in the plant.

Mr. WIPPELL GADD wanted to know of a ready process for the estimation of emetine in liquid extract of ipecacuanha. He had raised the question last year, and was told in an editorial note that the Pharmacopœia gave a process, and that settled the matter. He thought that was very important, from a commercial point of view.

Dr. SYMES said it was unfortunate that Dr. Attfield had felt hurt by the criticism which had been passed on the Pharmacopœia. The authors might have expressed them-

selves rather bluntly, but no doubt they felt strongly on the subject. He thought the work done by the authors was most valuable. If processes were put forward which showed that ipecacuanha yielded more alkaloid than was provided in the B.P. process, surely the work was of some use. He hoped, provided no better process be discovered in the meantime, that their process would be adopted in the next Pharmacopœia.

Dr. ATTFIELD said the Medical Council were becoming more and more indebted to pharmacists for their research year by year. Alluding to prosecutions by public analysts, he said the Pharmacopœia, notwithstanding the position in which it was placed by legal tribunals, was not a legal standard in cases under the Sale of Food and Drugs Act, and, if anyone had the courage to make a test-case, he had no hesitation in saying that judges would say the same. It was a great convenience for magistrates, who did not know anything of the subject, to bring it forward as an official book and make it the standard. That was a very common practice, and very annoying to traders; but the fact remained that it was not a legal standard, however much it suited their convenience. The Pharmacopœia was rather set before pharmacists as a standard to aim at, and if it was attempted to legalise the Pharmacopœia as a standard a great mistake would be made. Instead of being a standard of what was good and genuine, there would be created a standard of legalised adulteration.

Mr. FARR, replying on the whole discussion, said estimations had been made with extracts obtained from eight different sources, and no particular variation in results had been noted. He thought Mr. Naylor's method would involve a slight percentage of loss in the process. He had obtained the same colour-reactions as Mr. Bird, but he could not give any definite factor to work upon; the factors varied considerably.

Mr. NAYLOR said he was sorry to think they were lacking in courteous speech, but he did not think Dr. Attfield had much to complain of. If in ten years anyone went there with another new process, and said of their process that "it was tedious, it was complex, it was prodigal of time," why, let them say so? They might be justified in doing so. At any rate, Dr. Attfield knew as well as everyone else that all was done in the proper spirit, and he hoped that when the next Pharmacopœia was published the process would be improved upon.

The Conference adjourned for luncheon.

Second Session, Tuesday Afternoon.

There were not more than twenty members present when at 2.10 P.M. the PRESIDENT called upon Mr. RANSOM to read the paper by Mr. H. J. Henderson on the

Assay of Belladonna Plasters.

Most of the processes devised for this purpose require the use of chloroform and alkali solution, and much ingenuity has been expended with the object of breaking up the intractable emulsion which results. Mr. H. J. Henderson, of Hitchin, avoids chloroform and alkali, and employs ether in combination with glacial acetic acid and water to separate the belladonna constituents from the other ingredients of the plaster which dissolve in the ether. The acid liquor contains the belladonna alkaloids, and is drawn off, extractive precipitated by lead acetate, excess of lead removed as sulphate, and the concentrated washings yield alkaloid by the usual alkaloidal-extraction methods. Full details on page 214.

Mr. BIRD emphasised the fact that two operators may often independently arrive at the same result. He had himself experienced great difficulty in extracting the alkaloids from belladonna-plaster, and this had led him to devise a process, which was published in the February number of the *Analyst*, and was similar to the one they had just heard. His process he outlined as follows: Belladonna-plaster, chloroform, and glacial acetic acid were warmed together to dissolve, lead acetate added and warmed with dilute sulphuric acid. The mixture was then treated with a Berkefeld filter connected with a vacuum, and the lead-sulphate residue removed in an almost dry cake. The cake was then broken up and warmed with chloroform and dilute sulphuric acid, filtered, and transferred to a separator. The chloroform was run off, aiding the process by warming, and washed twice with dilute

sulphuric acid. To the aqueous liquid chloroform and a decided excess of ammonia was added, and the process concluded on the lines laid down in the Pharmacopœia. He had found the process perfectly satisfactory.

Mr. H. W. JONES (Coventry) said he had tried Mr. Bird's process and found it answer well.

Dr. ATTFIELD thought the author of the paper deserved the thanks of the meeting. The paper was free from the objections he had urged against some of the papers read in the morning. The Pharmacopœia in the case of belladonna-plaster gave a standard, but no process. In Canada, where many analyses had been made, great weakness had been shown in the plaster. He (Dr. Attfield) had not quite grasped the processes which the Canadian analysts employed, but the processes which Mr. Henderson and Mr. Bird had disclosed seemed to be distinctly good.

Mr. MATHEWS asked if there was not danger in applying a large-sized belladonna-plaster to the body, seeing that a quantity of 50 grammes, which was not an unusual quantity to use in one plaster, would contain, roughly, $3\frac{1}{2}$ gr. of atropine. He (the speaker) had even seen bad results follow the use of the weaker plasters.

The next communication was on

Iron and Ipecacuanha.

Mr. F. C. J. Bird, following up some recent observations regarding the discrepancy between sp. gr. and ferric-oxide content of liquor ferri perchloridi fortis, finds that the discrepancy arises from the formula containing too little hydrochloric acid, the quantity given only being sufficient to dissolve iron equal to 1.44 gramme of Fe_2O_3 per 5 c.c. Mr. Bird proposes to increase the quantity of acid in the formula to 13 oz. 428 minims, and this gives a correct liquor. In his second paper Mr. Bird told how miscible fluid extract of ipecacuanha can be made. Briefly, the method consists in mixing either the B.P. liquid extract or, preferably, one prepared with 90-per-cent. alcohol with its own volume of water, whereby resinous and other non-alkaloidal matters are precipitated. The mixture is filtered, the alcohol recovered by distillation, and the aqueous liquor evaporated, the alcohol added, and the original volume of liquid extract restored. The resulting product, when filtered, is found to mix with sherry and other menstrua without depositing in the least. The paper included a number of valuable observations regarding the exhaustion of powdered ipecacuanha with alcoholic menstrua varying from 20 to 90 per cent. (page 220).

Mr. T. TYRER said he would like to supplement Mr. Bird's excellent paper. The question of the strength of liq. ferri perchlor. was a case in point of the difficulties they, as wholesalers, had to contend with in the double requirements of the B.P.—the gravimetric requirements, and the sp. gr. A reference to the table by Franz, in the "Chemiker Kalender" of Dr. Biedermann—tables which are well known, shows that a solution of a sp. gr. 1.0146 is equivalent to 2 per cent. Fe_2Cl_6 , 1.6317 to 60 per cent., 1.4118 to 44 per cent., and 1.4367 to 46 per cent. The B.P. contains 45.97 per cent., and reference to the table shows that this should have a sp. gr. of 1.4333, which approximated to the figure given in Mr. Bird's paper. The B.P. also says that 5 c.c. should give 1.6 gramme Fe_2O_3 , which works out at about 45.75 per cent. of Fe_2Cl_6 , or a sp. gr. of 1.4336 according to Franz's table. He (Mr. Tyrer) would like to quote some other figures from the table—35 per cent. would give a sp. gr. of 1.31; 40 per cent., 1.3622; 50 per cent., 1.4867—to show how dissimilar different series of tables were. In Landolt's book of "Physical Constants" there is a table, after Hager, quoted from Fresenius's "Zeitschrift," which gives 35 per cent. as sp. gr. 1.352; 40 per cent., 1.415; and 50 per cent. 1.547. After that he thought they might look over the comparatively mild delinquencies of the B.P. His point was that the contents of the preparation should be the main point to consider.

Dr. ATTFIELD would rather suspend his judgment on the matter after some letters he had seen in the *Pharmaceutical Journal*, the last of which was to point out that Mr. Bird's arithmetic was incorrect. As to procuring powdered gelatin, it could be had in any quantity, or was easily powdered if care was taken to keep the mill, in which there should be comparatively large masses of iron, cool. He agreed that a miscible liquid-extract of ipecacuanha would be an advantage.

Mr. KNIGHT asked if the ipecacuanha preparation sug-

gested by Mr. Bird had been put to any physiological tests. He was not a believer in such preparations as concentrated tinctures or concentrated waters. In his opinion the B.P. was no good; he always used good ipecacuanha, and got an active preparation by using as a menstruum $1\frac{1}{2}$ part 90-per-cent. spirit and $18\frac{1}{2}$ parts of good sherry.

Mr. JONES hoped to live long enough to see a B.P. issued which did not contain ipecacuanha wine. He suggested the use of a diluted tincture, which had the advantage that the trouble of detannating the sherry would be avoided.

Dr. McWALTER'S experience was that "hippo wine" made by the new process was utterly unreliable. When he was apprenticed to the drug-trade they used to make hippo wine by macerating 1 oz. of coarsely-powdered ipecacuanha with 1 pint of sherry; and, providing that the preparation was fairly fresh, it was a good emetic. The present process was tedious, troublesome, and expensive—if he might be allowed to touch on the question of the price of drugs before the Conference. When mothers came to chemists for ipecacuanha-wine they wanted an article that would make their child vomit, and looked up to him to supply such an article. A pharmacist, who was mostly compelled to buy his liquid extract of ipecacuanha on account of the tediousness of the process, had no scientific way of proving the activity, as they must remember that the action may be helped by the mixture of emetine, cephaeline, and another alkaloid about which they knew nothing. He did not know if any of those present knew what a fearful state of mind it was to be in when, having given 6 dr. of the wine to a child, vomiting could not be produced. It was their duty as pharmacists to see that, after all this elaborate chemistry, they supplied a wine that really did what was required of it.

Mr. BIRD, in reply, said he forgot to mention that the sp. gr. of the liquor ferri perchlor. was 1.49. He did not bring the matter forward to find fault with the B.P., but for the purpose of directing attention to it. Mr. Knight's suggestion in regard to ipecacuanha wine was hardly progressive, as it was on account of the fault found with the old process that newer ones were devised. The physiological effect of the miserable liquor had not been tried, but as resin only was removed he thought that the expectorant action of the preparation would not be altered, and he did not think the resin was of any benefit in dysentery.

The next communication was on

Syrup of Balsam of Tolu.

Messrs. Farr and Wright find that the B.P. method of making this syrup does not yield the best possible results. In their paper (page 212) they describe the properties of samples of hard and soft tolu balsams from which they have prepared the syrup. It is notable that the soft balsam contains about double the amount of cinnamic acid that is found in the hard. The authors made the syrup by six methods, and found that the best product was obtained by a process similar to that of the old Edinburgh Pharmacopœia process—namely, adding a spirituous solution of the balsam (4 in 12 of S.V.R.) to 26 of water at 70° C., shaking, and, after twenty-four hours, filtering and adding the liquor to seven times its volume of simple syrup.

Dr. ATTFIELD said it was generally admitted that there was a waste in making this preparation. The matter was looked into by competent men at the time of the compilation of the B.P., and the opinion was that the syrup was good, and suggestions of using less tolu and adding spirit to a syrup were thought to be bad pharmacy.

Mr. JONES asked if a syrup made from the suggested liquor kept its colour. He had had occasion to examine a number of samples of concentrated liquors, and they all, without exception, became coloured when mixed with syrup and were allowed to stand.

Mr. BIRD inquired if a syrup made from the liquor developed the benzine odour.

Dr. ATTFIELD said it was now settled that the decomposition of cinnamic acid in the presence of certain microbes gave carbonic oxide and acetylene, and that accounted for the benzine odour.

Mr. BIRD said his point was, Would the spirit which was used in the liquor prevent decomposition?

Dr. SYMES had experimented in the same direction some years ago, with a view of economising the balsam, but found he could not produce so aromatic a preparation if less tolu

was used. One object of filtering the liquor when cold, before adding the sugar, was to get rid of the cinnamic acid, which he understood had an irritating action.

Mr. RUTHERFORD HILL called attention to the process devised by F. Stephenson, which was given before an evening meeting in Edinburgh. In this process the balsam was ground up with the sugar and percolated with cold water. The process gave a good-flavoured and nice-tasting syrup. A syrup with spirit in it had an aërid taste and was objected to by those who were used to the taste of the ordinary syrup of tolu.

Dr. ATTFIELD said Stephenson admitted that his process was not an easy one. It was difficult to dissolve the sugar, and the product was not bright.

Mr. HILL said the product was quite bright. He was well acquainted with the process, and as to the solution of the sugar, all that was necessary was to regulate the percolation.

Mr. KNIGHT said he used a process which resembled Stephenson's, and which was given in Squire's "Companion." The resulting syrup was nicely flavoured and strong.

Mr. FARR, replying, said, in reference to the introduction of alcohol in the syrup, the quantity (20 drops to 1 oz.) was too small to be objectionable. He had not noticed any benzine odour develop in a syrup made with this liquor. He had tried cold percolation, but the results were not favourable, and besides the process was tedious. He would also like to point out that he had not mentioned that the liquor was to be filtered warm, but had suggested an ordinary summer temperature. No development of colour had ever taken place in any of his experimental syrups. He thought such a result would be due to the use of samples of balsam of tolu which were not genuine.

A local contribution was next on the programme. It was all about

The Bone-caves of South Devon.

Mr. R. Hansford Worth, the author, is a local geologist. He said that in Devonshire, wherever the middle Devonshire limestone occurs, bone-caves or fissures may be expected to exist. The most celebrated cave is the Kent Hole—a cavern to which access is easily obtainable. It has formed from early ages a den, a human residence, and an object of curiosity, wild antiquarian speculations, and classical investigation. Early investigators seem to have neglected the occurrence of human remains. Mr. Pengelly, who had charge of the more recent investigation by the British Association, published a report which is a classic on the subject. His remarks, which are very interesting, are unfortunately not pharmaceutical enough for us to quote at length. Portions of fifteen or sixteen human beings were found, sufficient to practically represent every part of the human skeleton. No complete skeleton was found, but from an examination of the remains the conclusion was arrived at that the race was a short one, averaging under 5 feet. The skulls were orthocephalic, and the teeth were in nearly every case exceptionally good. We do not print this paper in full.

The PRESIDENT, in thanking Mr. Hansford Worth, said that it was his pleasure to visit the bone-caves when he was in Plymouth twenty-two years ago, and when their Conference was held at the same time as the British Association. Mr. Pengelly accompanied the party, and as the caves were lit up for the occasion they saw them under the best conditions. He remembered the guide pointing out a date, 1647, and an Irish name scratched on the wall, which seemed to show that the Irish visited Plymouth a good many years ago, although it was after the time of the lions and bears. (Laughter.)

Returning to pharmacy the Conference heard some notes on

Ferrum Redactum.

Mr. E. Saville Peck, Cambridge, last year told the Conference that the B.P. method of estimating the amount of free iron in this product is not reliable, and it was suggested to him then that he should try the iodine method. This he did, but found that, as described by Schmidt, very variable results were obtained. This was proved to be due to an overplus of water, but with water equal in weight to the amount of iodine taken it goes well and gives concordant results. The paper is practically a record of these in comparison with figures obtained by the mercuric-chloride and copper-sulphate methods. The last-named is the B.P. one, and it appears that with samples containing less than 40 per cent. of free iron the percentages obtained are at least one-fourth higher than they should be (page 214).

Mr. TYRER said that, without knowing Mr. Peck was engaged on this investigation, he had been working on the same lines, and his results agreed with Mr. Peck's with scarcely a decimal point of difference. He agreed that the mercuric-chloride method of estimating the iron was the best.

Dr. ATTFIELD had never been quite satisfied with the copper-sulphate method—(hear, hear)—although some who failed with it had neglected to employ heat throughout the process—only at the beginning. He was inclined, from experiments he had witnessed, to favour the mercuric-chloride method, which he found very accurate. He was glad the iodine method was not so bad, after all, as it was an old favourite of his.

The PRESIDENT having remarked on the useful character of the paper,

Mr. SAVILLE PECK replied, and said he used heat throughout his estimations by the copper-sulphate method, as mentioned in his paper last year. There was one curious thing he had noticed in his experiments, and that was that after exhausting the iron with iodine, and washing to free it from iodine, it showed an extra 2 per cent. of iron by the copper-sulphate method. The copper seemed to dissolve something left behind, probably ferrous oxide. He would here like to emphasise the great necessity that existed for a standard volumetric solution of permanganate of potash in the Pharmacopœia, and hoped to see it included in the next edition.

The next paper read was on

Jaborandi.

Work on pilocarpine and the assay of jaborandi preparations, was reported on by Messrs. Farr and Wright (page 205). They find that the commercial tinctures and fluid extracts are exceedingly variable in strength, and attribute this largely to the difficulty, if not impossibility, of obtaining true jaborandi-leaves, those in the market being variable, and not usually the official kind.

Mr. THEO. WARDLEWORTH said genuine jaborandi-leaves were still to be had. The jaborandi arriving now was practically valueless as a source of pilocarpine, whilst some few years ago the leaves of *Pilocarpus microphyllus* (Stopf.), which regularly arrived in this country and yielded 3 per cent. of pilocarpine, were used in preference to *Pilocarpus pennatifolius*, which only yields $\frac{1}{2}$ per cent. He thought they ought, as pharmacists, to turn their attention to this small-leaf variety.

Mr. NAYLOR had found great difficulty in obtaining true jaborandi. Time after time he had submitted leaves from market samples to Mr. Holmes, who had pronounced them spurious. True jaborandi could be obtained, but not in sufficient quantity for pharmaceutical purposes; that he took to be Mr. Wardleworth's view. (Mr. Wardleworth: Exactly.)

Dr. ATTFIELD, as Editor of the British Pharmacopœia, sympathised strongly with them, although, after all that had been stated, he did not know where they were. His mind was in a state of confusion on the matter, and the question, as yet unanswered, was, Is pilocarpine the only active ingredient of jaborandi? He was afraid they must be content to wander on until they got some more definite work on the subject. At present it seemed to be indicated that the pharmacist should use leaves in proportion to their pilocarpine-content; but there was a very great "if" involved.

Dr. SYMES thought that, as the action of pilocarpine was well known to be exactly like that of jaborandi, a standardised liquid extract of jaborandi was indicated. There was no scarcity of either kind of leaves on the market.

Mr. JONES gave it as his experience that there were more preparations of pilocarpine sold than of jaborandi.

The meeting was then adjourned till next day.

Third Session, Wednesday Morning.

When order was called at 10.15 the PRESIDENT asked that the discussions might be limited to five minutes, and called on Mr. Druce to read his paper on

Devonshire Flora.

Mr. Druce, thus following the precedents established for him, or by him, at Glasgow and Dublin, gave the meeting a

fascinating talk about the flora of the district in which the Conference met. It is impossible to do justice to Mr. Druce's lecture without a phonograph, but we print his notes on page 218.

Mr. HOLMES, who initiated the discussion, said he was not a native of Devonshire, but through living in that neighbourhood for some years he was well acquainted with the flora. He then enumerated several varieties, which were either to be found, or were formerly to be found, in the district.

Mr. OSWALD READE, a local botanist, mentioned that *Althæa officinalis* and *Hyoscyamus niger*, which were formerly plentiful in the neighbourhood, were now extinct.

Dr. SYMES said Mr. Druce's papers had become a feature of the Conference, and he trusted they would be continued.

The PRESIDENT complained that no mention was made of the shamrock. Was it because it was a plant which would only flourish on Irish soil? (Laughter.)

Delphinium Staphisagria.

Mr. E. M. Holmes showed that the specimens of *Delphinium Staphisagria* in the botanical gardens of this country are really *D. pictum*. He came to this conclusion after growing specially procured specimens and consulting all the available botanical authorities (page 216). Mr. Holmes gave his paper in his usual chatty way, and exhibited many coloured specimens of the plants.

Dr. ATTFIELD said he was obliged to Mr. Holmes for taking some of the burden of the Pharmacopœia from his shoulders. The practical point was, on which of these two plants has the therapeutic reputation of stavesacre been founded? He would be pleased if Mr. Holmes could answer that question; if not, would it be desirable to get therapeutists to take the matter up for settlement?

Mr. RUTHERFORD HILL said that he had noticed that the stavesacre-seeds in the Edinburgh Museum were much smaller than the seeds usually found in trade. He believed the *Delphinium Staphisagria* grown at the Chelsea Physic-gardens was an annual, while the plant in the Edinburgh Botanic Gardens was biennial. From Mr. Holmes's explanation he concluded that the Edinburgh plant was *Delphinium pictum*.

Mr. DRUCE said he thought there could be no doubt that the Pharmacopœia-results had been obtained from the true *Staphisagria*.

Mr. HOLMES, in reply, said he had obtained seedlings from both plants, and by next year he would have good specimens to draw from. Contrary to Mr. Hill's experience, he had found the plant to be invariably biennial.

Terebene.

Mr. Lewis Ough has examined twelve commercial samples of English and German terebene, and finds that only three out of the twelve were strictly B.P. He pointed out that the B.P. characters and tests are not in accordance with the latest researches on terebene, and that manufacturers state that they cannot produce, or be sure of producing, a body which at all times will satisfy the B.P. requirements. Modification of the official description seems, therefore, to be requisite. (See the notes on page 209.)

Mr. THOMAS TYRER said as a result of experiments he had come to the conclusion that the large latitude allowed by the Pharmacopœia in the matter of boiling-point is inconsistent with obtaining an optically-inactive product. It must also be borne in mind that terebene rapidly changes from optically-inactive to a liquid inducing optical rotation. He thought the boiling-point should be altered from 165° to 175°. Oil of turpentine changes rapidly its sp. gr., boiling-point and optical rotation, and no two authorities were agreed on the constituents of turpentine or the products resulting from the action of sulphuric acid on it. Regarding the reversion of dextrorotatory terebene to levorotatory, he said that by the action of oil of vitriol at certain temperature and for a definite time the product can be converted. The conclusion he had come to was that the mere steam-blowing of oil recommended by the Pharmacopœia, as generally practised, is inefficient, but an inactive product can be obtained in a variety of ways with the latitude of temperature allowed by the B.P. Mr. Tyrer added that the making of terebene on a small scale is a comparatively easy matter but not by any means so on a technical scale.

Dr. SYMES pointed out that terebene could be easily made

by the dispensing-chemist, but the odour was liable to vary. His plan was to mix the new batch with the remains of the old, so as to tone down the odour. Terebene improved in smell on keeping.

Mr. NAYLOR spoke of the difficulty of making optically-inactive terebene on the large scale. He could not imagine why optically-inactive terebene was introduced into the Pharmacopœia when its reputation was made on an active preparation. His experience was that medical men preferred a slightly polymerised article on account of its nicer odour.

Dr. ATTFIELD said the impression that terebene was going out of fashion was unfounded, as Dr. Leech had recently stated that it had maintained the importance it had reached when it was inserted in the Pharmacopœia. They could never know what they were dealing with in a substance like terebene, which must contain a mixture of substances. It was on this account that the statement in the Pharmacopœia was made indefinite.

Mr. HOLMES thought that perhaps different turpentine might yield terebene with varying odours. Turpentine varied quite as much as the eucalyptus oils.

Diabetic Glucose.

Mr. R. H. Parker gave the Conference another example, of his fertility as a worker, by communicating notes in which the picric-acid and Fehling methods of estimating glucose were compared. He pointed out that the Fehling method does not give accurate results when less than 2 per cent. of sugar is present, and suggested to add a known amount of sugar so as to bring the proportion up to that which can be determined with accuracy. The results which he submitted of the two methods showed that both are in close agreement when the sugar is over 1 per cent., and below that the divergence is considerable, increasing as the sugar diminishes, and usually being intensified by sp. gr. The so-called "interfering-substances" appeared to affect the picric method more than the Fehling, and this gave rise to a series of problems which led Mr. Parker to make a series of colorimetric observations, by which he showed that with picric acid diabetic urines give marked opacity, and non-diabetic samples do not. A similar set of observations was made with Fehling's solution, and Mr. Parker proved that the opacity is characteristic of glucose and is not produced by "interfering-substances." Moreover, if there is less than 0.4 per cent. of glucose actually present, the amount may be approximately ascertained by noting the point at which opacity appears. The paper is printed on page 205.

Mr. BIRD thought the paper a valuable one, in so far as the suggestion of using a known quantity of glucose was concerned.

Mr. GERRARD thought the same, but said in his experience the interfering influence in the colour-reactions was very small indeed.

Mr. BREWIS said the method of adding a strong solution of sugar to facilitate the precipitation of copper was one which had been in use in the sugar trade for many years in testing samples of beetroot sugar.

Dr. ATTFIELD said it was no doubt customary to do so, but it had never before been suggested in connection with pharmacy until the present paper of Mr. Parker. The application of the principle to pharmacy was new, and it would facilitate that kind of analysis which can so well be followed by the ordinary pharmacist, and for which they should be able to obtain some remuneration. They need fear no competition in this branch from the wholesale chemist nor from the public analyst. It was peculiarly the province, in his opinion, of the chemist and druggist to examine such substances as morbid urine.

Dr. SYMES thought, contrary to Mr. Gerrard, that there was a good deal in Mr. Parker's point about the colour-reaction. In his experience there was a considerable variation of colour.

Dr. MCWALTER, commenting on the green colour obtained by Fehling's solution, recalled an examinee of the General Medical Council who was ploughed for stating that Fehling produced a green with urine. The student happened to be a chemist, and it seemed strange to the speaker that these examiners should be so ignorant, and that not one of their colleagues should know enough to correct them.

Mr. PARKER briefly replied.

Hydrogen Peroxide.

Mr. C. T. Tyrer communicated many interesting notes on the keeping-properties of this solution. They include observations

as to the rapidity of loss when preservatives are used, as well as different kinds of bottles. It appears that champagne and soda-water bottles are best, and that there is less loss when the bottles are nearly full. The effects of carriage, heat, and other common but little-thought-of influences were considered, and specifically reported on in the paper, which is printed on page 215.

Dr. ATTFIELD said the paper would be invaluable as a guide to users, makers, and buyers. He was not quite agreed as to insertion of a test for hydrofluoric acid.

Mr. T. TYRER, in replying, read a letter from Mr. Napier Sutton, in which he said he had found hydrogen peroxide an invaluable oxidiser for use in the official analysis of alkali gases. Its use was particularly shown in the oxidation of SO_2 to SO_3 , and in oxidising thiosulphates and persulphates into higher compounds. The hydrogen peroxide must, however, be free from chlorides or contain a known quantity.

Standards for Analysts.

Messrs. Moor and Cribb communicated a very long paper, entitled "Suggested Standards of Purity for Foods and Drugs," which was practically an appeal on behalf of public analysts for assistance from pharmacists in deciding upon standards for certain drugs—foods, however, being added to the argument. They said:—

One of the principal difficulties encountered by the public analyst is the lack of information on which he is to base the conclusions to be drawn from his work. In the case of many articles, where and how is he to draw the line separating the genuine from the adulterated? In the case of very many articles there might be a third class, in addition to the genuine and the adulterated—namely, specimens "of inferior quality, but not of necessity adulterated."

The object of this paper is to attempt to ascertain whether the dividing line between the three above-mentioned classes can be drawn somewhat more distinctly than at present. For this purpose we require to know both the average composition of genuine articles, and also the composition of articles not of the highest quality, but of proved genuineness.

We have no legalised standards at all, except in the case of spirits, and in the case of a few articles of food the limits adopted by the Inland Revenue authorities are known (as in the case of milk), and are probably used by most analysts. Certain standards were proposed by a committee in the early days of the Society of Public Analysts, which dealt with milk, cocoa, vinegar, mustard, and a few other articles; but at the present day some of the standards then agreed on would not find general acceptance.

In addition to the question of the composition of articles, the names and definition of many substances deserve attention, as a very slight change of description in the article sold may result in its composition being entirely different.

There are some three hundred articles which have been, or might be, purchased under the Food and Drugs Acts, and we are engaged in collecting, as far as possible, reliable figures on the composition of these articles.

The scheme under which we are dealing with each article is as follows:—First, the name of each article, its definition and description, its adulterations, the standard where possible, or, where sufficient information does not exist to formulate a standard, its average composition; next, references to recent literature; and, finally, remarks.

The authors then proceeded to quote factors for various drugs as given by different observers—e.g., tr. aconiti, arnica, cantharides, &c., caraways, cayenne pepper, ginger, and other spices, as well as foods. So far as the drugs are concerned, their remarks chiefly consisted of contrasts of published data, in many cases differing from each other, on the same thing. Adulterations were also mentioned; but there was nothing of practical novelty, further than the suggested principle, adduced.

The PRESIDENT said the paper was most valuable, but instead of five minutes it would take them at least five days to do anything like justice to the subject. He would suggest, therefore, that twelve months hence, when members had fully digested the matter, would be the best possible time to take it up. It could not possibly be done in the time at their disposal.

Dr. ATTFIELD quite agreed with the President, and said it would be in the memory of all present that a former Queen of England had one fine morning presented to her a long document by the Chinese Ambassadors as to the reasons why they were unable to be present at her levee the day before. There were twenty, and the first was that unfortunately, by an accident on the river, the whole of their official robes had gone to the bottom. Her Majesty said, "I don't want to hear the other nineteen." (Laughter.) The one

reason he would give for supporting the President's suggestion was that they had not time. In the abstract which Messrs. Moor and Cribb had given there were no less than twenty-seven articles mentioned, to say nothing of over 250 articles in the index of suggested standards. The paper should be discussed sooner or later, and by those capable of discussing it, and from all points of view. He agreed that they owed a debt of gratitude to these gentlemen for having brought the subject forward. Irrespective of the question of time, there were other reasons for postponing discussion. Some extremely important questions of policy came up in relation to the whole subject. What he said on the previous day in respect to one article applied to every one of the 250 or 260 articles brought before them by Messrs. Moor and Cribb. There were also general questions of policy to be gone into in relation to the subject of standards itself, and secondly the subject of standards in pharmacy in relation to the Sale of Foods and Drugs Act. Then they would get on very delicate ground, and his opinion was that the latter part of the subject would be better discussed in the journals of pharmacy than in the atmosphere of a room which, however warm, would become far more heated if the subject were discussed.

Mr. GLYN-JONES said many members had been present for the greater part of the morning, for the express purpose of hearing and taking part in a discussion on this paper. To many members Mr. Moor's paper was the paper of the Conference, and there would be a great deal of disappointment if discussion were not allowed.

Dr. SYMES thought the President's meaning was that the subject would occupy so much time that it would be unfair to other papers; but the value and the necessity for such a discussion was undoubted, as the editor of the *Pharmacopœia* had told them that book was no standard whatever; and, there being so much diversity of opinion between public analysts and Somerset House, it was absolutely necessary that some committee of reference should be appointed. As an authority, that committee should be one with some amount of elasticity and judgment as to what may be considered.

The PRESIDENT, replying to Mr. Glyn-Jones, said the committee had decided the previous night that there would be no general discussion on the paper that day.

Mr. GLYN-JONES said it was a pity that members were not informed of that fact before.

Mr. S. R. ATKINS explained that it was purely a question of expediency.

Mr. S. MAITLAND, who said he had been in business for fifty-five years, and was present at the last Plymouth Conference, and could not hope to be present at the next, asked the President whether there would be any possibility of a discussion being held on that very interesting paper.

The PRESIDENT said the only opportunity which he could possibly suggest was at the excursion next day. (Laughter.)

Mr. MOOR, replying, said he hoped pharmacists would favour him with various figures for the tables which had been prepared and presented to each member. The public analysts had promised to help him, and he would be very glad if pharmacists would do the same.

A Weight-burette.

Mr. E. Saville Peck described a weight-burette which is in use in the laboratory of Sydney College, Cambridge. The burette is constructed to discharge definite weights of standard solutions into known weights of solutions to be tested. The strength of the latter is found by noting the weight of standard solution required for titration. For the exceedingly precise estimations required in pure chemistry, but not so much in pharmaceutical chemistry, weighing is considered necessary, as it is not always possible to work at 15° C. The burette is figured on page 216.

Mr. BIRD thought the instrument very useful, and applicable to the titration of small alkaloidal residues.

Dr. SYMES suggested that the projecting tube or the neck of the burette might be replaced by a grooved stopper. The tube was liable to get broken off.

Mr. PECK in replying mentioned that the burette was not his own invention, and was to be had at chemical-instrument makers' in London.

Melting-points.

Messrs. T. Tyrer and Albert Levy made an elaborate report on the melting-points of acetanilide, phenacetin, phenazone

and sulphonal. Commercial samples of the last-named substance only agree with the B.P. figures, all the others being below. The authors explained that this is due to the B.P. having taken the figures for chemically-pure products or not allowing for the presence of hygroscopic moisture, and they argued that the B.P. should be brought into line with what is commercially possible. The communication contained a mass of valuable data which it was impossible for the Conference to take in at a sitting (page 219).

Mr. TYRER caused some amusement by hoping that his remarks on the *Pharmacopœia* would not cause any undue heat. He also desired to thank the editor of *THE CHEMIST AND DRUGGIST* for preparing for him a concise abstract of the paper. The walls of the room were covered with tables and diagrams to illustrate the paper. The meeting then adjourned for luncheon.

Fourth Session, Wednesday Afternoon.

At 2.30 the Conference was resumed, opening with a

DISCUSSION ON MR. TYRER'S PAPER.

Dr. ATTFIELD, referring to the method of treating suggestions from pharmacists in revising the British *Pharmacopœia*, said Mr. Tyrer personally was well satisfied when he was consulted. He had asked Mr. Tyrer as to whether he rightly interpreted his opinion on that point, and he replied, "Most certainly," and that he had only some two or three suggestions, which were comparatively unimportant, and which had not been attended to in the particular direction he desired. That needed a word of explanation. Sometimes on major and generally on minor points there had come suggestions utterly inconsistent with each other. He claimed Mr. Tyrer as one whose experience was that the compilers of the *Pharmacopœia* had been glad to attend to suggestions when made by competent pharmacists, and he assured them that such suggestions always had the very best attention of the compilers, and always would have—certainly as long as he had anything to do with the matter. Mr. Tyrer had alluded to the somewhat important subject of the figures showing the melting-points in the official book, and had said they seemed somewhat inconsistent with the directions for taking melting-points given on page 436 of the appendix of the *Pharmacopœia*. The memoranda had been very carefully drawn up, and the Conference might assume that they represented the opinions of the referees as well as the opinions of gentlemen who had written papers. But while these memoranda should be adhered to by those who dealt with the question of melting-points in the future, it must be distinctly understood that the method described in the appendix had not necessarily been the method by which melting-points given in the *Pharmacopœia* had been determined, and they would see that they must be so, with a moment's reflection. The best sources had been drawn upon in order that they might get the melting-points most generally recognised, but it must not be for a moment supposed that those who had helped to compile the *Pharmacopœia* had in all, or in many, cases verified those figures so published by competent authorities. However desirable it might be to verify the figures, it was quite out of the question, inasmuch as it would take up too much time and cost too much. As it was, they would have perceived that the cost of the *Pharmacopœia* had been raised from 6s. or 7s. to 10s. The Medical Council made no profit out of it—the Government took good care of that. The Medical Council only estimated the cost and the Privy Council fixed the price. So that it was absolutely impracticable for any *Pharmacopœia* Committee in anything like a reasonable time of three or four years to go into the question of verifications by competent authorities. A good deal in that direction had been done in the production of the present *Pharmacopœia*, and had increased the cost, but it was impossible to adopt that as a general principle. He hoped Mr. Tyrer would get his literary friends not only to publish his tables for reference in the future, but, if possible, to give a coloured page of his graphic diagrams representing the whole of the subject. Any suggestions made by pharmaceutical, pharmacological, or botanical authors found their way into four quarto copies of the British *Pharmacopœia*, labelled "Researches," "General notes," "Criticisms," and "Errata." In them there was an

enormous accumulation of notes of admirable suggestions; there were none in the pages for "Errata"; and while "Researches" had many pages, that labelled "Criticisms" was a very fat document. He could assure Mr. Tyrer that the only things that went into the waste-paper basket were the envelopes and the wrappers. (Applause.)

Mr. NAYLOR asked why in the melting-points of various substances the Pharmacopœia did not make dryness of the substance determined a condition of the method?

Dr. ATTFIELD replied that the various methods were judged according as seemed best. If it was thought the dry condition was best, the dried substance was used; if not, the other was taken. What ruled in the B.P. methods was the consistency of commerce.

Mr. RUTHERFORD HILL said it was evident, from what Dr. Attfield had said, these processes were introduced without the results being verified; and he was of opinion that the majority of members would not regard such a practice as a satisfactory one. He very much doubted whether any other Pharmacopœia—the U.S.P., for instance—was compiled in such a manner, and he thought a readjustment of the conditions was necessary. A country like theirs ought surely to be able to compile a Pharmacopœia under the best possible conditions. At present, it was admittedly a collection of scissors and paste.

This last statement Dr. ATTFIELD vigorously denied. It was an utterly erroneous one from the premisses. It was not such a book.

Mr. JONES having spoken,

Mr. TYRER, in reply, said the ethics of the compilation of the Pharmacopœia had been challenged, but it was fortunate in having one of the ablest defenders possible. Dr. Attfield was right. He was bound to defend that for which he was semi-officially responsible, and the ethical questions involved were too serious to be dismissed. He did not think, however, that the learned professor need be always on the defensive; it was a question for the welfare of the public. The name of the Privy Council had been introduced, which meant that Government money was involved, and he would suggest that the Government should contribute to the research necessary for the settlement of these vexed points. Had the great Pharmaceutical Society, with its enormous resources, done anything at all in its Research Laboratory? Ought it not to do something with Government help? He thought this was the psychological moment at which to suggest that it was now time to seek such aid, for never were the resources of the Pharmaceutical Society's laboratory more to be desired, and by pursuing such researches inimitable service would be done to the community. He would be glad to get blocks of his tables made and help towards the publishing of the papers.

Mr. ATKINS thought a great deal of good work had been done by special men in their ranks, but confessed that not much work had been apparent from the Research Laboratory.

The PRESIDENT called for a special vote of gratitude to Mr. Tyrer, which was as heartily accorded.

Pilocarpine Salts.

Dr. H. A. D. Jowett reported on the characters of pilocarpine hydrochloride and nitrate. He has examined these salts as found in the market, and has determined their constants, his figures differing from those of Paul and Cownley, and less so from Petit and Polonowsky's. It is possible to produce pilocarpine salts containing but a small percentage of other alkaloids, the total removal of which he did not recommend, because the small proportion of other alkaloids does not interfere with the medicinal properties and further purification is expensive. Dr. Jowett's method of assay consists in isolating the alkaloids from the preparation by any approved method, dissolving the alkaloids in a saturated alcoholic solution of pilocarpine nitrate, and adding to this nitric acid to acidity, whereupon the freshly-formed pilocarpine nitrate crystallises out, and is weighed as such. This method of crystallisation from alcohol (in which the nitrate is feebly soluble) is also used for purifying the alkaloid (page 203).

Mr. RANSOM, who read the paper in the absence of the author, said he hoped they would have a standard preparation in the next Pharmacopœia, and that investigators would now set about to find out what that standard should be.

Dr. ATTFIELD said that when the Pharmacopœia was compiled the question was raised as to whether the pure or impure salt should be included, and in the then state of knowledge on pilocarpine it was decided to include the commercial article.

Mr. GERRARD believed that pilocarpine was by no means a constant substance. He had twice seen pilocarpine in a crystalline form, but he was not able to fulfil the conditions and get the salt crystalline at will. He thought that perhaps the pure base was crystalline.

Following this came a paper on

Commercial Araroba.

In this Mr. Edwin Dowzard reported upon a number of samples which he had examined, and which showed great variation in quality, some containing much water added to prevent irritating dust rising) and more ash than should be there. He suggested that the B.P. should fix a limit of ash (page 216).

Mr. HOLMES said that the first sample of araroba which came to this country passed through his hands. The drug of recent years was much inferior to what formerly came into the market. The yield of chrysarobin has gone down to 28 per cent. He found chloroform the best solvent for chrysarobin, and found that when benzol was used chloroform still extracted some active ingredient from the residue.

Dr. SYMES said he supplied Mr. Holmes with the sample he spoke of. It had been lying in the warehouses at Liverpool for ten years previously. He mentioned that araroba often contained 30 per cent. of added moisture—with a view of keeping down the dust, it was alleged. Chrysarobin was now as much used as the crude drug.

Mr. NAYLOR thought the B.P. might give an ash-limit. He had found it to vary from 3 to 10 per cent.

Dr. SYMES said there was much araroba now imported that was quite worthless, it contained so little chrysarobin.

Mr. WARDLEWORTH, who had read the paper in the absence of the author, in replying, said buyers should always ascertain the amount of water in the samples submitted to them.

The next paper read was on

Almond Oil.

Ol. amygd. persic. is made from peach-kernels or apricot-kernels, according to Messrs. Umney and Swinton, who wrote the paper on the subject printed on page 218. They state that either kind is used according to which happens to be the cheaper. The nitric-acid test detects peach-kernel oil, but not apricot-kernel oil—at least, not so easily; and as the latter is more abundant at present, the observation is of immediate interest, and will necessitate an alteration in the B.P. test.

Mr. BREWIS, in discussing the paper, said he had been closely associated with the manufacture of almond oil, and he was surprised to hear that the nitric-acid test was valueless, which might be, but there was nothing easier than the demonstration of the presence of kernel oil in almond oil. This question was not so important as whether the peach-kernel oil placed on the market was genuine or adulterated. It was the experience of manufacturers that there was no difference commercially between peach-kernel and apricot oil; but it was an undoubted fact that in ninety-nine cases out of 100 the samples sold were not peach-kernel, but apricot-kernel oils. Therefore, in his opinion, the most important point to determine was if scientific workers could discover some means by which the adulteration in kernel oils might be ascertained—what the adulterations were, and to what extent they existed.

Mr. HOLMES, in the course of a few remarks on the paper, thought it would be advisable for all wholesale houses to state in their lists the definite sources of the substances they sold. This would be a decided advantage to the retail trade.

Mr. WRENN also spoke, and

Mr. T. EDWARD LESCHER said he thought it was well known that two oils were sent out by the wholesale houses, these being ol. amygd. dulc. ang. and ol. amygd. persic., and, unless specially ordered, it was, he thought, the universal custom to send out the English oil.

Mr. ALLEN said the idea that apricot-kernels came from

Persia was a myth. A large proportion of these kernels came from Syria and Barbary.

The next subject was

Terpeneless Oils.

Mr. Williams Idris's paper on the terpeneless oils of lemon and orange was a revelation of a condition of commercial morality which comes little short of fraud. Having ascertained in his own laboratories that when terpeneless oil of lemon is carefully prepared from the purest lemon oil obtainable it has certain characteristics, he examined thirteen specimens of commercial terpeneless lemon oils, representing, if we may read between the lines, at least six distinct makes, and of these four makes, or nine samples, were "faked." Two other makes, representing four samples, were of undoubted purity, but in one a trace of terpene had been left. In Mr. Williams Idris's paper, printed on page 217, full particulars are given of the analyses. He also added analytical data regarding terpeneless oil of orange, which showed that half of the samples examined contained considerable quantities of terpene.

Mr. WRENN thought they were going in the wrong direction in trying to isolate the citral and other aldehydes from lemon oil, as the heat employed decomposed the oil.

Mr. HOLMES pointed out that although citral was the chief perfume present in lemon oil, its odour was considerably modified by the geraniol present.

Liquor Bismuthi.

Mr. F. R. Dudderidge has worked still further with the B.P. formula, and pointed out in his paper (page 211) where it fails. As Umney has previously pointed out, the formula is improved by increasing the amount of potassium carbonate. Mr. Dudderidge finds 4 dr. to the pint best, and he states that a perfect preparation is obtained by (1) not diluting the nitric-acid solution of bismuth with water, (2) pouring the bismuth solution into the potash one (not vice versa, as the B.P. has it), and (3) dissolving the potash salts in a definite volume of water. He also supports MacEwan's recommendation to add ammonium citrate to the solution.

Dr. ATTFIELD said he wished to repudiate ever giving a formula for the salt in the solution of bismuth. He merely suggested one.

Carbon Disulphide.

Mr. W. Elborne related to the Conference the fact that when he exposed some carbon disulphide to diffused daylight for six months a flocculent brown deposit was formed which he believed to be due to impurities the nature of which he had not actually determined. The moral of his communication (printed on page 215) is that this liquid should be kept in the dark.

Dr. ATTFIELD did not think Mr. Elborne had added much to our knowledge of the subject. He had not proved that the corking had anything to do with the matter.

Mr. TYRER said the decomposition could not be prevented.

The next paper read was on

Blaud's Pill Capsules.

Mr. C. E. Stuart, B.Sc., has examined numerous samples of Blaud's pill capsules, and presented his results to the Conference. He showed that it is easy to prepare a large capsule containing 3 gr. of ferrous carbonate, but much more difficult to make a small capsule of the same strength. The difficulty lies in the preparation of a sufficiently concentrated soft mass. The contents of the capsules were removed under ether, sulphuric or phosphoric acid added, and the iron estimated with standard bichromate solution; and it was found that commercial samples are not what they seem (page 207).

Mr. NAYLOR skimmed the cream off the paper in the absence of the author, and his colleague (Mr. RANSOM) did the same for one on

Oil of Cardamoms.

It appears from this communication, made by Mr. E. J. Parry, that there is doubt as to what kinds of cardamoms are used in distilling the essential oil—distillers, like some pharmacognosists, being confused about the varieties. Accordingly, Mr. Parry obtained authentic specimens of Malabar and Mysore cardamoms as cultivated in Ceylon, and had them distilled. The oils obtained were identical in physical and chemical characters, but the Mysore cardamoms yielded twice as much—2.3 per cent.—and the Malabars 1.3 (page 208).

It was getting towards 4 o'clock, and discussions were distinctly "off." The members wanted the programme cleared, and the next subject disposed of was

Effect of Heat on Sodium Bicarbonate.

Mr. C. S. Dyer read a paper last year on the available CO_2 in B.P. granular preparations, in preparing which he had studied the loss of CO_2 from the sodium bicarbonates by the heat employed. In March Mr. W. B. Cowie read a note at Edinburgh on the decomposing-temperature of sodium bicarbonate, in which he said that, at a temperature of between 52.6°C . and 54.6°C ., sodium bicarbonate begins to decompose and give off carbonic anhydride, and that at 70°C . the bicarbonate is completely decomposed. The results were so surprising that Mr. C. S. Dyer conducted a fresh investigation. Three methods were used—(1) the loss of weight on heating was determined; (2) the evolved gas was measured; (3) the products of decomposition were collected in potash bulbs and chloride-of-calcium tubes, and checked by the loss in weight of the salt. The experiments show that below 60°C . dry sodium bicarbonate does not appreciably decompose, below 100°C . decomposes very slowly, and above 120°C . decomposes decidedly rapidly (page 215).

There followed this a note on

B.P. Lozenges.

In 1891 Mr. Frederick Davis communicated a paper to the Conference showing that commercial medicated lozenges did not as a rule come up to the Pharmacopœia requirements. He has continued the work at intervals since then, but was unable to detect any improvement until the issue of the present B.P. His latest results show that the quantities of active ingredients ordered by the B.P., 1898, are nearly always approached, the exceptions being soda lozenges and sulphur lozenges, in which some laxity in preparation still exists. His paper is reported on page 217.

Regarding this Dr. ATTFIELD and Dr. MCWALTER said a few words, the former in praise of the author, and the latter remarked that in several lozenges which he had tested lately he had found glucose.

One of the papers which were not read was by Mr. DAVID HOOPER, on

Natural Rubber-substitutes.

The author described three rubber-substitutes, from Indian plants, which he had recently examined. One sample was from the stem of the Bantian (*Ficus bengalensis*), the sister tree of *Ficus elastica*. It contains about 20 per cent. caoutchouc, and is but feebly elastic on account of the large proportion of resins present. The second specimen was from *Calotropis gigantea* and *C. procera*. The electrical properties of the gum were tested as long ago as 1852, when it was found to be useless for cable-making purposes. The third substance examined was the coagulum from the juice of *Excoecaria Agallocha*. This juice has very irritating properties which unfit it for commercial uses, and also contains nothing related to caoutchouc. The three substances have no industrial future, but the object of the paper was to stimulate inquiry and search for rubber-substitutes. More about it on page 208.

Another paper which was not read was on

A New Condenser.

Mr. E. W. Lucas gave an illustrated description of a steam-condenser of his own design which he has been using for the past two years. The structure of it is illustrated in the author's communication printed on page 210. We need only say here that it is made on the double-condensation principle, whereby there is obtained a yield of distilled water more than twice as great as that obtained with the worm condenser, working for the same time and with the same supply of steam.

Mr. Lucas's diagram of the condenser had not turned up and without it the paper was unintelligible.

PRESENT OF BOOKS.

The PRESIDENT, in making the presentation from the Bell and Hills Fund, explained that the late Mr. T. H. Hills left a sum of money to be invested, and the interest to be used in the purchase of books, to be given to any local association where the Conference met year by year. It was a very generous contribution, and the result was that the Executive Committee year after year were enabled to hand over to local associations a gift of books, which the Association was asked to choose. As showing the character of

the local Association in Plymouth, it would be interesting for him to mention what books had been chosen. There were five books on botanical subjects, and for this he thought they might thank the gentleman who took a great interest in botany and instructed the class that met there. There were three books on chemistry, one on *materia medica*, and one on pharmacy. Pharmacy seemed to be very low down in the list. He did not know whether it was low down in Plymouth; perhaps it was so high up that they did not want any books. There was also one book on the microscope. If there was no local association in the town in which the Conference met, as in the case of Belfast last year, the books were handed over to the care of the committee of the free library, but in these towns there was a local association which had a library. Mr. C. J. Park was President of that Association, and, as President of the Conference, he had very much pleasure in handing over to his care those books. (Applause.)

Mr. PARK expressed the great pleasure he felt in accepting the books, which the local Association would very much treasure, not merely on account of their intrinsic value, but for their associations. Mr. Reade, one of the most capable field botanists in England, had assisted them in the choice of books on botany, and they had in him a distinguished member of the Association. As regards chemistry and pharmacy, he believed pharmacy was in a very fair state in the Three Towns, and that the students were very well taught. They would regard the books as a very welcome addition to their library. They had already a very good nucleus, thanks to the donations of many of their friends. Their local Association was a resuscitated body, some of the books being supplied at the time of the visit of the Conference twenty-two years ago, and he hoped it would continue to prosper until the Conference came again. The Association was doing really good work for their students.

Mr. RUTHERFORD HILL moved the election of the

FORMULARY COMMITTEE

as follows:—Messrs. A. C. Abraham, F. C. J. Bird, T. Greenish, H. Martin, W. Martindale, F. Ransom, C. Symes, H. Wilson, R. Wright, and W. A. H. Naylor. The committee had been in a state of suspended animation, awaiting the publication of the *Pharmacopœia*, to which Professor Attfield had devoted marvellous assiduity and matchless skill. The book, on the whole, reflected great credit on Professor Attfield and those associated with him. The *Pharmacopœia* represented the state of things at the date of publication, but they were continually progressing, and it was the duty of the Formulary Committee to see that the *Pharmacopœia* represented the state of pharmacy up to the time it was published; therefore, he hoped the committee would enter upon their work with diligence.

Dr. MCWALTER seconded, and expressed his pleasure that Mr. Martindale had allowed himself to be nominated as a member of the Committee. They gathered from Dr. Attfield that to employ a number of scientists and experts to overhaul the B.P. would cost something like 20,000*l.* a year.

Dr. ATTFIELD said that what he said was that it would cost 20,000*l.* for twenty years.

Dr. MCWALTER said the Committee would save the cost for one year. The motion was carried.

NEXT YEAR'S MEETING.

Mr. J. F. HARRINGTON, on behalf of the Western Chemists' Association of London, invited the Conference to meet next year in London. He pointed out that his Association included members from all parts of London and surrounding district, and the invitation was a very cordial one from Greater London. He need not point out the attractions of London, but if it was their pleasure to accept the invitation everyone connected with pharmacy in London would do his best to make the Conference of 1900 a happy and profitable one. (Applause.)

Mr. W. WARREN supported the invitation. Londoners had been loyally treated by the provinces for many years, and would be glad to do something in return for the kindness which had been shown them. The ladies would not have a dull half-hour, and with their large hotels they would perhaps be able to get all under one

roof. They could not hope to surpass the labours given so freely and kindly in Plymouth, but they promised to do their best to give all a hearty welcome. (Applause.)

Mr. ALBERT COOPER, endorsing the remarks of Messrs. Harrington and Warren, said he was probably asked to do so because he was the oldest chemist in London. He had felt particularly at home in Plymouth. He was born in an adjoining county, and he had the great pleasure of having for his mother a Devonshire woman, and all who knew her would agree that she was a most charming woman. He assured them that no effort should be spared to make their visit to London an extremely happy one, and he was sure the ladies would vie with each other, as the ladies of the Three Towns had done, to secure the comfort and enjoyment of the visitors. The men would also do their best; and when he had the honour of representing the richest city in the world, he believed that when they left London they would retain for a long time pleasant memories of their visit.

A letter was also read from the President of the Pharmaceutical Society of Great Britain in support of the invitation, and stating that the Society would be pleased to offer to the Conference the usual facilities for meeting in their rooms in Bloomsbury Square, and the President and Council would give the Conference a hearty welcome.

The PRESIDENT expressed the hope that if the Conference accepted the invitation ladies would outnumber the men. It was an unusual thing for the Conference to be invited to the chief city of the world. Only once before in the history of the Conference did it ever meet in London, and that was because London took them in out of charity, when Ireland refused to receive them.

Mr. G. C. DRUCE (Oxford) moved the acceptance of the invitation. He was told that even in London there was a large expanse of green fields and pleasant pastures where botanists could wander at will. (Laughter.)

Mr. BEGGS (Dublin) seconded the motion, and it was carried.

Mr. WELLS, representing the Pharmaceutical Society of Ireland, invited the Conference to hold its meeting at

DUBLIN IN 1901,

and said it was a happy coincidence that the Conference should close the century by visiting Liverpool, Glasgow, and Belfast—the commercial capitals of England, Scotland, and Ireland, and it was also a fitting thing that they should visit London, the capital of the world, next year. From the President's address it appeared that there were a great many Englishmen who had no idea where Ireland or Dublin was. They had a river in Dublin, and the perfume from it was just as strong as that from the Thames, but they were about to purify it. (Laughter.) If they came to Dublin he could promise them a truly Irish welcome.

Mr. BEGGS supported the invitation.

The PRESIDENT remarked that it was not the custom of the Conference to accept an invitation two years in advance, but he fancied, from what he knew of the feelings of those who went to Dublin twenty-one years ago, and of those who went to Ireland last year, that if the invitation was renewed next year it would be taken into very favourable consideration.

ELECTION OF OFFICERS.

Mr. NAYLOR moved the election of the following officers for the ensuing year:—

President: Mr. E. M. Holmes, F.L.S., London.

Vice-Presidents: Messrs. R. J. Downes, Ph.C., Dublin; J. F. Harrington, Ph.C., Walter Hills, Ph.C., F.C.S., John Moss, F.I.C., F.C.S., London.

Hon. Treasurer: Mr. J. C. Umney, Ph.C., F.C.S., London.

Hon. Secretaries: Messrs. W. A. H. Naylor, F.I.C., F.C.S., and F. Ransom, Ph.C., F.C.S., Hitchin.

Hon. Local Secretaries: Messrs. W. Warren and Herbert Cracknell, London.

Other members of the Executive: Messrs. Leo Atkinson, F. C. J. Bird, J. W. Bowen, H. Collier, F.C.S., G. C. Druce, M.A., F.L.S., Professor Greenish, E. Saville Peck, B.A., J. Davy Turney, and Edmund White, B.Sc.

Auditors: Messrs. F. Maitland, Stonehouse, and J. H. Mathews.

The motion was carried.

The **PRESIDENT** said it gave him very great pleasure to hand over to **Mr. Holmes** the difficult post he had held during the year; the new President would not experience the difficulties he had had because he was on the spot. He trusted he would be spared to go through the year with health and strength, and that he would not regret his election. (Applause.)

Mr. HOLMES, who was heartily cheered, said he felt sure that this very kindly selection had been due in a very large measure not to any ability he possessed, but to the wish of friends there to do a kindly action, and possibly to recognise the little work he had done for materia medica while he had been Curator of the Pharmaceutical Society. He felt sure his Plymouth friends would not let him be without that moral support which he would feel next year with their presence in London. He felt sure they would not be disappointed in the welcome they would receive. Rumours had reached him that pains would not be spared to make the gathering worthy of the largest city in the world, and to make it a gigantic success. He hoped it would be one of the largest meetings of pharmacists on record. Next year was the year of the Paris Exhibition. Pharmacists would come from all parts of the world, and he hoped many would visit London and make the Conference additionally interesting. He hoped the idea of federation of all local associations might next year become an accomplished fact. The Conference might exercise a very great power through the provincial Association in obtaining from the body of Pharmacists that respect from the Legislature which their position, knowledge, skill, and responsibility demanded. (Applause.)

Mr. S. R. ATKINS moved a vote of thanks to the Local Committee, especially to Messrs. Park, Turney, and Cocks, for the excellent arrangements they had made, and which had made the meeting so pleasant and successful. The motion was seconded by **Mr. ALLEN**, and carried.

Mr. PARK, in acknowledging the compliment, said they regarded the election of **Mr. Holmes** as an indirect compliment to Plymouth and their local Association. They were proud of having **Mr. Holmes** as one of their honorary members. They could not count in that room half-a-dozen men who had done for materia medica a tenth part of the work he had done.

Mr. TURNEY also replied, and acknowledged the cordial support he had received from the Committee. He was also deeply indebted to the Ladies' Committee, and especially to **Mrs. Herbert Wood**, the Secretary of that Committee.

On the motion of **Mr. WELLS**, seconded by **Mr. BRANSOM**, hearty thanks were accorded to the Mayor and Corporation for the use of the Law Courts and Corn Exchange.

Dr. SYMES moved the best thanks of the Conference to the President for the efficient and enthusiastic discharge of his duties. This was seconded by **Mr. HOLMES**, supported by **Dr. ATFIELD**, and carried. The President having briefly replied, the Hon. General Secretaries (Messrs. Naylor and Ransom) were cordially thanked for their services. This terminated the business of the Conference.

Who Were There.

SUBJOINED is a list of those who up to Wednesday afternoon had, by signing the visitors' book, acknowledged the hospitality of the chemists of the Three Towns:—

Allen, W. C. and Mrs.
Arkinstall, W., London
Arnott, D., Pontypridd
Arnott, M. T., Pontypridd
Ashton, F. W., London
Atkins, S. R., Salisbury
Bailey, J. H., Plymouth
Ball, A. W., London
Barge, J., Plymouth
Beggs, G. D., Dalkey
Bilson, T. E., Bournemouth
Bird, F. C. J., London
Blackmore, J. F., Plymouth
Bond, J. Kinton, Plymouth
Bowen, J. W., London
Breeze, A. D., Plymouth
Breeze, G., Plymouth
Breeze, H., Plymouth
Breeze, Miss M., Plymouth

Breeze, R. J., Plymouth
Bremridge, R., London
Brewis, E. T., Leytonstone
Brodie, R., Glasgow
Brunt, G. H., Birmingham
Buck, A. S., Liverpool
Burley, W. and Mrs., Edinburgh
Bushnill, F., Plymouth
Butler, E. H., Leicester
Chalmers, W., London
Cocks, E. C., Stonehouse
Cocks, James, Plymouth
Collenette, A., Guernsey
Collier, H., London
Collis, A. F., Bath
Collis, J. T., Weston-s.-Mare
Cooper, Albert, London
Cross, W. G., Shrewsbury

Davey, H. D., Devonport
Davies, J. T., Swansea
Downing, T. J. W., Plymouth
Druce, G. C., Oxford
Evans, J. H. E., Liverpool
Everson, H. C., London
Farr, E. H., Uckfield
Ferrier, D. H., Dundee
Foggan, G. and Mrs., Bedlington
Gadd, H., Exeter
Gadd, H. Wippel, Exeter
Gadd, S. C., Exeter
Gerrard, A. W., London
Gifford, R. L., Blackburn
Glyn-Jones, W. S. and Mrs., London
Goldfinch, G., Hendon
Green, E. W. H., Plymouth
Green, John, Swindon
Grose, N. M., Swansea
Hanson, A. W., Sidcup
Harrington, J., and Mrs. and Miss, London
Heap, J. H., London
Hearder, H. P., Plymouth
Heaton, J. A., Burnley
Hill, J. Rutherford, Edinburgh
Hobbs, A. E., Tunbridge Wells
Holmes, E. M., London
Hooper, David, Calcutta
Howie, W. L., London
Hughes, J., Swansea
Hunt, E. A., Plymouth
Hunt, F. W., Plymouth
Johnson, M. K., Devonport
Johnstone, C. A., and the Misses, Manchester
Jones, H. W., Coventry
Kelly, P., Dublin
Knight, G. J., London
Lake, J. Hinton, Exeter
Lescher, E., London
Lloyd, J., Liverpool
Luxton, F., Exeter
McWalter, J. C., Dublin
Maitland, F., Stonehouse
Maitland, S., Plymouth
Mathews, J. H., London
Mathews, H., Oxford
Maurice, J., Plymouth
Mitchell, S. C. F., St. Austell
Moor, C. G., Exeter
Naysmith, Mr. and Mrs., Arbroath
Naylor, W. A. H., London
Nicholl, J. W., Belfast
Nightingale, J. C., London
Orange, F. C., London
Ough, L., Leicester
Paigo, H., Exeter
Park, C. J., Plymouth
Parker, R. H., London
Paul, Dr. B. H., London
Payne, J. C. C. and Mrs., Belfast
Peck, E. S., Cambridge
Phillips, J., Wigan
Pickard, H., Stratton
Pidd, A. F. and Mrs., Manchester
Poole, J., Birmingham
Ransom, F. and Mrs., Hitchin
Reade, O. A., Haslar
Reynolds, H. J., Plymouth
Robinson, W. P., Clapham
Rowell, P. F., Exeter
Sangster, A., Hampstead
Shorrocks, R., Darwen
Silson, R. W. and Mrs., Bradford
Smith, J., Liverpool
Squire, F. R., San Remo
Streding, J. —
Symes, C., Liverpool
Taylor, G. S., London
Turney, J. Davy, Plymouth
Turney, S. B., Mr. and Mrs., Plymouth
Tyrer, T., London
U'Ren, W. C., Plymouth
Wardleworth, T. H., Liverpool
Warren, W., London
Weary, Miss B. G., Devonport
Weary, C. T., Devonport
Wells, W. F., jun., Dublin
Weston, S. J., London
White, Edmund, London
White, J. M., Devonport
Woods, Mr. and Mrs. H., Plymouth
Woolley, S. W., London
Wrenn, W. A., Taunton
Wright, T. R. and Mrs., London
Yates, C. G., Brighton

The Federation.

OUR remarks last week regarding the meeting of the Federation of Chemists' Associations have been taken in good part. The meeting was not held on Wednesday afternoon, but on Tuesday evening, when part only of the programme was discussed, and the rest left over until Wednesday evening at half-past 5. Some years ago the C. & D. asked to be admitted to the meetings of the Federation, but we were denied. We asked again this year, in the hope that the members would see that their programme was of such a nature that an independent report would be the best advertisement of the results arrived at. In vain. We understand that **Mr. Cowley** has resigned the secretaryship.

Business Changes.

MR. J. MILNER has opened a pharmacy at 85 Woolwich Road, Greenwich, S.E., not Charlton, as stated last week.

MESSRS. B. WATERHOUSE (LIMITED), chemists, Sheffield, are to open another branch in the new suburb of Ecclesall Road, Sheffield, as soon as the premises are finished.

MR. F. J. EVANS, chemist and druggist, has opened the East-end Pharmacy, St. Anne's-on-Sea. The entire fittings have been supplied by Messrs. Ayrton & Saunders, Liverpool.

MESSRS. D. H. WOOD, Chas. S. Coleman, and Thomas Tripp have become representatives of Messrs. Durant & Co., of Rosebery Avenue and Mount Pleasant, London, for their "Dylissia" preparations in Scotland, Ireland, and on the South Coast of England respectively.

MR. JOHN SLACK, chemist, Longsight Road, Manchester, having given up his business, his stock and fixtures have been disposed of, and the premises will henceforth be devoted, it is expected, to some other trade. **Mr. Slack** is now interested in mineral-water manufacture.

Trade Report.

The prices quoted below are the bottom prices obtained for bulk quantities by importers and manufacturers, who do not supply retailers. They are in many cases exclusive of various charges.

42 Cannon Street, London, E.C.: July 26.

IT will be specially noted that this report closes on Wednesday evening, as, owing to the largeness of the present issue, we are compelled to go to press a day earlier. We shall, however, insert in the Situations Supplement any important information which we may learn on Thursday.

The leading feature this week has been the reduction of 2d. per oz. in quinine by makers, and coming as it does at a period of extreme depression, it has completely knocked the bottom out of the second-hand market, which has had a temporary collapse. The opinion prevails among a few here that we shall see shilling quinine again ere long. Beyond this change, however, there is little to report, business in drugs being confined to small quantities. At the last moment oil of star-anise is excited, importers having considerably advanced their quotations. The following are other changes which have occurred since our last report:—

Higher	Firmer	Easier	Lower
Chamomiles Coriander-seed Oil, anise, star Oil, turpentine Tin crystals	Acid, tartaric Aniline oil and salts Benzol Glycerin	Acid, citric Quinine Shellac	Ammonia sulphate

The following are among the arrivals of drugs, &c., at this and other ports from July 20 to July 25 inclusive:—

Aloes (Curaçao), 43; (from Aden), 23; (Cape), 37; arrow-root, 111; balsam copaiba, 7; benzoin (from Penang), 67; (from Singapore), 56; buchu, 11; camphor (from Hamburg), 252; (Jap.), 145; cardamoms, 131; castor oil (Ital.), 250; (Belg.), 18; (E.I.), 1,399; chamomiles, 16; cinchona, 313; cod-liver oil, 20; gamboge, 13; gentian, 11; gum Arabic, 111; gum copal, 1,167; gum myrrh, 30; gum olibanum, 41; honey (Calif.), 12; (Chilian), 316; insect-powder, 10; iodine, 21 (in transit); lemon-juice, 140; manna, 6; oils, essential (N.Y.), 168; opium (Smyrna), 28; peppermint oil, 10; rhatany, 10; rhubarb, 39; (from Hamburg), 27; saffron, 2; sarsaparilla, 6; scammonium, 7; soy, 246; squills, 16; tamarinds, 67; wax, bees' (Chili), 27; (Spanish), 56; (Jam.), 33; wax, carnauba, 23; wax, ceresin, 100; wax, Japanese, 100; wood oil, 415.

Java Quinine.

A meeting convened by the directors of the Bandong quinine-works was held on June 15. About twenty planters attended and submitted their grievances, which were acknowledged by the managers of the works, who assured the planters that steps had been taken to prevent their recurrence in the future. It was decided in principle to establish a quinine-market in Batavia at the end of January, 1900, when 10 tons of sulphate from the Bandong works will be offered for public auction. Samples of this quinine will be sent before October 31 to China, Japan, the Philippine Islands, and the German, French, and Australasian colonies. The feeling at the meeting showed that unity existed between the planters and the Bandong works. They have appointed a committee of five to elaborate the scheme, and the planters are going to supply the bark for the particular lot of quinine in question.

Otto of Rose.

The London *Standard* has a reputation for its foreign news, but if the following paragraph on otto of rose, which appeared in its issue of July 22, is to be taken as a specimen we think it would be better if they confined themselves to

political matters only, as the paragraph in question is as inaccurate as it is amusing. Evidently their Vienna correspondent buttonholed a childlike and b'and distiller who had an axe to grind. This is what he cabled:—

The rose-harvest in Bulgaria and the distillation of oil of roses are now completed. The quantity obtained this year is about 200,000 grammes less than last year's yield, the decrease being due to the drought. Estimating the value of 1 gramme of oil of roses at 2½f., this means a turnover of 500,000f. The price of attar of rose has risen rapidly this year, and in all the large towns of Europe the demand is increasing. Stocks, therefore, will soon be exhausted. In Bulgaria the entire quantity at present stored is estimated at only about 50,000 grammes.

Mitcham Oils.

Mr. Alfred W. Bush (W. J. Bush & Co., Limited, Artillery Lane, E.C.), writing on July 26, says:—

A few days after the issue of our last report respecting the peppermint-crop some rain fell and gave a brighter appearance to the fields. A little rain in the summer is a dangerous thing, because the rain excites the upper portion of the roots, draws fibres to the surface, only to be scorched and withered by the summer sun. Some farmers assert that this is what has occurred. We, however, hardly think this to be absolutely the case; the little rain we have had has, in our opinion, not been enough to enable the backward state of the crop to recover lost time, or fill up vacant spaces, and it would be folly to say it has done any harm. The position to-day is that what a month ago was considered uncertainty and fear has developed into fact. Without the least possible doubt the crop will be a very light one; here and there are a few splendid fields, but the majority are short and thin and almost a complete failure. The sale of peppermint oil during the last year has been very slow, owing doubtless to the exceptionally low prices of American and other foreign qualities. It is difficult in these days to prognosticate the course of prices, and we think the figures will be ruled by the demand rather than by the total yield of oil. Cutting has already commenced. The lavender-crop is simply magnificent; everything is in its favour. It is now in full bloom, and those who wish to see the fields a blaze of blue, and enjoy the delicious refreshing scent in its most natural state wafted in the air, should hurry into the country before the flower falls into the hands of the reaper. Chamomile shows a fair crop, and is now in full flower.

Senega-root.

Now that the season for gathering and importing senega has started, it may be well to call attention to the state of the primary markets, where there appears to be a great diversity of opinion regarding the position of this article. In a recent issue of the *O. P. & D. Reporter* is published a letter from a correspondent in Minneapolis, Minn., dated June 15, in the course of which he says that:—

For the past ten years there has been no profit in handling senega in the North-West. Generally some new party embarks each year in the business and gets the bulk of the root, and those that do not get their share will bear the prices on those that hold it. The weather has been wet in the North-West, and the receipts of new root are backward, but cash offers are being made direct to the diggers, and this will stimulate digging, because those that deal in root and haven't it have to get root quickly to supply their orders. There is plenty of old root to supply the demand for one year.

Referring to the various qualities of senega, he says that:—

Minnesota and Dakota root is always of small size and fine in quality. The coarse root is produced in Manitoba, but the proportion of coarse root dug is about 50 per cent. to 60 per cent. of the entire Manitoba crop. In former years senega-root used to be branded prime Minnesota and Manitoba, and there was a difference of from 3c. to 5c. a lb. in the price. But for a good many years the root has been sold for about the same price, and anyway not over 1c. to 2c. a lb. difference between the best and the poorest. The prime Minnesota is probably worth considerably more difference than is obtained, but the way that it came about that the margin was lessened was that when a buyer bought the root, stamped prime Minnesota, he would kick on the quality, and finally no quality was represented and the drug was simply offered as "Baled Senega," and prices were nearly the same. Of the four large collections of old root being held here and in New York, two of them originated in Manitoba, and the owners wish to throw discredit on Minnesota senega in Europe in order to sell their own. Minneapolis is the most important senega-market of the country. Manitoba root is handled here, as well as Minnesota and Dakota.

Another writer, in the *Winnipeg Commercial*, of June 20,

states that large stocks of old root have accumulated at various points, and so far scarcely any new root has come into the market. At the above date 18c. was the quotation for choice root in Winnipeg, while some would not quote over 15c. per lb. He also reports that the root from the Northern districts during the last few years has been very coarse and bulky, and is not worth nearly so much as fine Manitoba. Since the above letters were written the markets both here and in New York have advanced, owing to an active demand, heavy sales of Western root being made at 25c. to 26c. in New York. Arrivals there, however, are coming in slowly, and as it is known that there are large quantities at the sources of production, it is unlikely that New York dealers will pay much higher figures, although it is a known fact that the supply in New York is very small.

Cablegram.

HAMBURG, July 26, 12.46 P.M.:—Refined camphor is a steady market at 320m. per 100 kilos; and star-anise is advancing, 187½m. per 100 kilos, being the current quotation. Quinine is dull at the decline. (See also Situations Supplement.)

Heavy Chemicals.

[These prices are for market-centres other than London]

There is again a rather better tone to be noted in the general condition of the heavy-chemical market, the inquiry for practically all the main products being distinctly good, and orders fairly plentiful. Under such conditions values are well maintained, and, in some instances, notably bleaching-powder, caustic soda, tin crystals, and pitch, advances are to be reported. The demand for miscellaneous products from home consuming trades is very good.

ALKALI PRODUCE.—The heavier demand for bleaching-powder, especially for export, has caused a greater firmness in price, and 4l. 5s. to 4l. 7s. 6d. per ton for softwood casks, free on rails, is now being asked; 5l. per ton, f.o.b. Liverpool, is the figure for hard-woods. Caustic soda is also higher, 76 to 77 per cent., 8l. to 8l. 5s., f.o.b. Tyne or Liverpool; 60 per cent., 6l. 7s. 6d. to 6l. 10s.; 70 per cent., 7l. 7s. 6d. to 7l. 10s.; 74 per cent., 7l. 15s. to 7l. 17s. 6d. Salts are lower than when last quoted, but is in fair inquiry at 24s. to 25s. per ton, free on rails in bulk. Soda crystals, ammonia alkali, and bicarbonate are all steady at unchanged rates. Yellow prussiate of potash firmer, and range of quotations for best Lancashire makes is now 8d. to 8½d. per lb.

TIN CRYSTALS, in sympathy with the tendency of the metal, have advanced still further, and stand at 8½d. to 9d. per lb., and are very firm thereat.

ZINC SALTS.—Very firm with advancing tendency. Present quotations are:—Chloride solution, 7l. 10s. per ton, and sulphate crystals, 7l. 15s. to 7l. 17s. 6d.

COAL-TAR PRODUCTS.—Benzols show a further improvement as regards price, but the demand is not very heavy; 90 per cent. now stand at 8½d.; October to December, 9d.; and 50 per cent., 9½d.; August to December, 10d. Carbolic acids also stand better. Crude, 60 per cent., 2s. 1d. to 2s. 2d.; and 75 per cent., 2s. 8d. to 2s. 8½d.; crystals, 34–35°C., 6½d. to 7½d.; 39–40°C., 7½d. to 7¾d. Anthracene is unchanged: A grade, 3½d. to 3¾d.; B grade, 2½d. to 3d. Aniline oil and salts are a shade firmer; the former is quoted 4½d. to 4¾d., the latter 4d. to 4½d. Toluol, 1s. 1d. to 1s. 2d., and pure, 2s. 2d. Pyridin unchanged, at 4s. 9d. to 4s. 10d. Pitch, 29s., f.o.b. Naphthalen: solvent, 90 per cent., 1s. 1½d. to 1s. 2d.; 95 per cent., 1s. 2½d.; crude, 30 per cent., 3¾d. Solvent wood, colourless, 2s. 9d. to 3s.; and miscible, 4s. to 4s. 3d. Creosote steady at 3½d.

SULPHATE OF AMMONIA.—Quiet, at slightly lower figures.

SULPHATE OF COPPER.—Easy, at 24l. 10s.; Anchor, 26l. 5s. and Liverpool, 25l. to 25l. 10s.

German Market.

Hamburg, July 24

Few changes are reported this week, and transactions are of a retail character, as usual at this time of the year.

AGAR-AGAR.—Prime quality is very scarce at 325m. per 100 kilos.; inferior can be had at 315m. per 100 kilos.

BALSAM, PERTU, is easier at 15½m. per kilo.

CAMPHOR, REFINED, shows rather a better tone for forward delivery—viz., August at 325m. per 100 kilos., and September-December at 340m. per 100 kilos., while the quotation for prompt delivery is still unaltered at 320m. per 100 kilos.

CORIANDER-SEED.—Telegraphic Morocco advices report a very considerable advance, 24m. per 100 kilos. being asked for prompt shipment. On the spot there are still some lots offered at 17m. per 100 kilos.

QUININE.—The German makers have reduced their quotations 5m. per kilo. The market is in consequence very quiet, and no transactions are reported.

PEPPERMINT OIL.—H.G.H. is unchanged, but firm, at 5.15m. per lb., and Japanese at 7.25m. per kilo.

STAR-ANISE OIL is dearer, and 13½m. per kilo. is now quoted, owing to higher offers from China.

STAR-ANISE SEED is also decidedly higher, and holders now ask 185m. per 100 kilos.

London Markets.

ACID, CITRIC.—The late activity has given place to a quieter feeling, and there are now second-hand sellers at ½d. per lb. below last week's quotations—viz., 1s. 6½d., although others ask 1s. 7d., and makers 1s. 7½d., for English crystals.

ACID, TARTARIC.—Very firm and in brisk inquiry, at 1s. 1d. per lb. for English. The stocks of foreign acid on the London market are getting into smaller compass, and sales have been made this week at 1s. 0½d., but the majority of holders quote 1s. 0¼d. per lb.

ALOES.—Quiet. About 20 cases of Zanzibar aloes in skins, from Aden, have arrived this week.

BALSAM COPAIBA.—The stock in first hands in New York has been exhausted, recent holdings to the extent of 100 cases having been purchased by dealers; quotations are unchanged, however, at 36s. to 38c. per lb. for prime Central American.

BELLADONNA-LEAVES are very scarce, and the exorbitant figure of 50s. per cwt. is asked for foreign. Most kinds of continental herbs are scarce this year and coming in slowly.

BENZON has been in fair inquiry since the auctions, and sales comprise good almonded Sumatra seconds at 10l. per cwt., down to 8l. for fair ditto, and for commoner 6l. to 6l. 10s. per cwt. Siam gum has been selling slowly at prices which do not transpire. Good Palembang is very scarce and almost unobtainable.

BUCHU.—Since the auction one broker has cleared his catalogue of this article, the business being for export and comprising medium to fair round green leaf at 4½d. to 5d., and yellowish, 4¼d. per lb.

CAMPHOR.—English refiners report an active market especially for tablets at current quotations. German refined is also in a firm position. Japanese crude is generally steady, importers quoting 130s. to 132s. 6d. per cwt., c.i.f., though there are sellers on spot at 129s. to 130s. Cables from China on Tuesday quoted 128s. to 129s. per cwt., c.i.f., but there are second-hand spot-sellers at less.

CHAMOMILES will be scarce this year—in fact, very few offers are made from producing countries; 160s., c.i.f., is one quotation received this week, but it is out of the question.

CINCHONA.—Our Amsterdam correspondent writes on July 25 that both bark and quinine are very quiet, the only news of importance being that the Amsterdam quinine-works have lowered their prices for quinine to 33f. per kilo. for Ed. III, and 28½f. for Ed. II, against 37f. and 32f. The shipments of bark from Ceylon for the week ending July 4 were nil, and from January 1 to July 4 they were:—

	1899	1898	1897	1896
Lbs.	414,873	489,687	380,400	610,457

COCAINE.—Very firm. Agents for the B. & S. brand report sales this week at 11s. 6d. per oz., but this figure is now nominal, and they wait instructions from their principals.

COLOCYNTH.—There have been no arrivals this week, and the scarcity is still apparent. According to Bill B of the Customs imports, 150l. worth was entered on July 15, and not 125 cases, as reported by us last week.

CORIANDER-SEED.—Reports have reached here from the different producing countries to the effect that on account of very meagre returns and unprofitable results during the last few years there has been very little sowing of seed this season, and the current crop will be short. One holder quotes 9s. per cwt., c. and f. terms, for sound seed.

DRAGON'S-BLOOD.—Quiet, with sales of a few reed gumex auctions at 12l. per cwt. Two cases of fine quality have arrived this week.

ERGOT OF RYE.—Sound Russian is scarce and almost unobtainable, 1s. 1d. per lb. being the nearest quotation.

The Spanish offered in auction last week is still available at 1s. 6d. per lb.

GLYCERIN.—Firmers this week and in better demand, though quotations are unchanged. It is difficult, however, to get a rock-bottom price, and refiners are by no means unanimous in their quotations. Higher prices are also asked for crude.

Barcelona exports in 1898 were 866 tons (34,640 $\frac{1}{2}$); and in 1897, 922 tons (30,727 $\frac{1}{2}$).

IPECACUANHA.—Very firm, with sales of a few bales Brazilian root at 15s. per lb. and Cartagena at 11s. to 11s. 6d. The latter figure is now asked for Cartagena, of which 14 bales have arrived since the sale.

MORPHINE.—Very firm, at 4s. 9d. per oz. from makers for hydrochloride. Makers do not contemplate advancing prices unless there is a substantial advance in opium.

In 1898, 75,700 oz. (15,653 $\frac{1}{2}$.) were imported into Shanghai, as against 68,170 oz. (16,793 $\frac{1}{2}$.) in 1897.

OIL, ANISE (STAR).—Higher. At the end of last week the market was very quiet at 6s. to 6s. 1d. per lb., but since there has been an advance to 6s. 4d., and, in some instances, 6s. 6d. spot is asked, but not paid; for forward delivery from 6s. 10 $\frac{1}{2}$ d. to 7s. 3 $\frac{1}{2}$ d. per lb., c.i.f., is quoted, according to importer.

OIL, CASTOR.—Medicinal Italian is quoted 32s. 6d. and tasteless 31s. 6d. per cwt., c. and f. London.

OIL, COD-LIVER.—No change here.

BERGEN, July 22.—The firmer feeling has been maintained, and prime non-congealing cod-liver oil is not obtainable below 55s. per barrel, f.o.b. Bergen. In the Northern towns, however, the feeling is still firmer, and there are no sellers either in Aalesund or Tromsø even at 55s. The export from the whole of Norway is higher than in any previous year, and the statistics for Bergen show 7,282 barrels exported, against 4,647 barrels last year.

OIL, OLIVE.—Pure Tuscany is quoted 57 $\frac{1}{2}$ l. per ton of 1,045 kilos, in pipes; Lucca cream, 54 $\frac{1}{2}$ l.; and extra sublime, 52 $\frac{1}{2}$ l., c. and f. London.

OIL, PEPPERMINT.—Quiet, with small transactions of Japanese demethylised at 3s. 6d. per lb., spot. HGH is still 5s. 6d., c.i.f. Advices from New York, dated July 19, report sales to the extent of 4,000 cases "Western" oil at 80c. to 85c., and 85c. to 90c. per lb. is now asked.

OIL, TURPENTINE, is very strong and active; American on the spot is now quoted 31s. per cwt.

OPIMUM.—London dealers report a dull market for opium this week, with scarcely any inquiry from the consuming-trade, but notwithstanding the slow demand there is no abatement of firmness, fine Persian being offered at 11s. 9d. per lb., but without demand. In druggists' and manufacturing kinds only a limited business has been done at previous rates, and for soft-shipping there is practically no inquiry. News has been received here that the crop-estimate will be 6,000 to 6,500 cases, but some in the trade are inclined to believe that these figures are being circulated for speculative purposes. We comment on the position editorially.

CONSTANTINOPLE, July 21.—Opium maintains the firm position of the past few weeks, and what few sellers there are hold for top prices. There have been a few sales for London during the past week, at the parity of 8s. 8d., f.o.b., for old, and 8s. 4d. per lb., f.o.b., for new. Should buyers keep off during the next month or two prices may possibly recede slightly, in view of the crop having turned out so much less than was originally expected. This is not so much due as some people would make out to adverse weather. The real reason is that values of barley and wheat have been so high during the past two to three years that it suits peasants to sow these staples rather than cultivate opium. As it is, opium sowings in the Karahissar district have been on a much larger scale than would have been the case under ordinary circumstances, and probably the reason has been grasped by but few. It is not generally known that the oil extracted from the poppy-seed is largely used by natives in the place of butter and other oils. Last year, owing to small crop, they ran very short in this important item in their food-line, and hence the larger sowings this season than would otherwise have been the case. With the spread of railways inland the cultivation of the poppy must perforce give way to wheat, barley, and other cereals, and as a consequence the average of the Turkish opium-crop must come down considerably. The yield this year will probably be not much over 6,500 cases all told.

SMYRNA, July 14.—The opium-market this week has been very firm, and well maintained at last week's prices. Buyers for quantity have been in the market, but sellers are trying to force a further advance. New-crop has been coming in more freely of late, as buyers in the interior, seeing the high position in Smyrna, have followed suit, and are paying the full prices asked by farmers. As our bankers advance over 80 per cent. of the cost, holders will keep firm so long as they can, and only a total absence of business of two or three weeks' duration may establish a cheaper market, otherwise prices will advance further—say, 9s. to 9s. 6d. as to quality—if present active demand continues. The sales this week amount to 28 cases, including 10 cases old Karahissar, at the equivalent of 8s. 11d. per lb., c.i.f., 3 cases new Karahissar talequale at 8s. 8d., and 15 cases at 8s. 6d., all for exportation.

Another correspondent, writing from Smyrna on the same date, practically confirms the above, and adds:—Other buyers have now ranged themselves on the syndicate side—indeed, they have followed them like a flock of sheep—the result being that higher prices have been paid for new opium in the interior than those ruling in Smyrna. In spite of all what has been said regarding the low estimate of the new crop, the arrivals of new opium have been remarkably heavy—viz., 551 cases against 170 cases only at the corresponding period of last year—and those interested ought to keep this fact well in view.

ORRIS—Quiet. Florentine, extra-picked, is quoted 31s.; prime sorts, 27s. 6d.; and small, 27s. per cwt.; Veronas, 20s. down to 16s. 6d., all c. and f. terms.

QUININE.—The announcement of a reduction of 2d. per oz. on Monday by the quinine-manufacturers was as startling as it was sudden, but considering the depression that has existed on this market for the past three weeks the reduction was only natural. The United States market, however, is directly responsible for this collapse, as for some weeks the competition between manufacturers and dealers there has been keen, so much so that the German manufacturers were losing business, as the New York market was below the London parity, and a second reduction of 2c. per oz., as reported in our American cable last week, gave the cue as to the position of the market there. As far back as July 15 the American makers contemplated a revision of prices, as there was nothing in the outlook to warrant a stronger market, and as second-hand holders had shown increased weakness the reduction was inevitable. Second-hand holders on the London market have naturally shown increased weakness in consequence, and on Monday there were sellers of good German brands at 1s. 2d. per oz. for August delivery, and on Tuesday business was done at 1s. 1 $\frac{1}{2}$ d. to 1s. 1 $\frac{3}{4}$ d. To-day (Wednesday) second-hand holders are trying to talk the market firmer, but with poor result, there being buyers at 1s. 1 $\frac{1}{2}$ d., but no sellers. The general opinion for the moment is that we shall see shilling quinine again, and that ere long. The official price is now 1s. 4d. per oz. for 1,000 oz. lots. Howards' quote 1s. 5d. per oz. in bulk (100-oz. tins) in quantities of 1,000 oz., and 1s. 6d. for not less than 100 oz. in one tin, and correspondingly higher prices for smaller packages. Their quotations, however, are only for limited quantities, and for prompt delivery only. Makers have also reduced their prices for salts, the quotations for the more important in 1-oz. vials now being as follows:—Quinine benzoate, 2s. 4 $\frac{1}{2}$ d.; bihydrobromide, 2s. 5 $\frac{1}{2}$ d.; bihydrochloride, 2s. 4 $\frac{1}{2}$ d.; hydrobromide, 2s. 2 $\frac{1}{2}$ d.; hydrochloride, 2s. 2 $\frac{1}{2}$ d.; hypophosphite, 2s. 4 $\frac{1}{2}$ d.; phosphate, 2s. 4 $\frac{1}{2}$ d.; salicylate, 2s. 2 $\frac{1}{2}$ d.; and tannate, 1s. 4d. per oz. 100-oz. lots in one tin are charged 4d. per oz. less.

RHUBARB.—After the auction last week some 30 to 40 cases were sold at the limits, including good small to bold high dried at from 9 $\frac{1}{2}$ d. to 11 $\frac{1}{2}$ d.; Canton, good hold flat, 1s. 2d., and round, 1s.; good medium round, 11 $\frac{1}{2}$ d. to 1s., and flat, 1s.; rough pickings, 9d. per lb.

SARSAPARILLA.—Since the auctions no business appears to have been done. About 20 bales Lima and Jamaica root have come to hand this week.

SULPHONAL.—In spite of the fact that the second-hand stocks are said to be exhausted, low offers of odd parcels continue to be made, and a 56-lb. parcel was on the market on Tuesday for which 14s. would have been accepted.

MR. CHARLES UMNEY has returned to business this week apparently restored completely to his former vigorous health.

Correspondence.

In writing letters for publication correspondents should adopt a concise, but not abbreviated, style. They are requested to write on one side of the paper only. Letters,

Notice to Correspondents. *with or without a nom-de-plume, must be authenticated by the name and address of the writer.*

Queries should be written on separate pieces of paper, and the regulations printed under the sections to which they apply should be strictly observed.

The Edinburgh Suggestions.

SIR,—Allow me to state that you were not quite correct in saying that I had not seen the Edinburgh documents when I wrote last. The fact is I did see them, but was not allowed to read them. I gathered the general drift of them, however, and since then I have had an opportunity to peruse them fully.

The main question in regard to these suggestions is this, "Were they, or were they not, sent to the Lord Chancellor?" I have asked this question in your pages and I have asked privately, but Edinburgh is as dumb on this point as a drum with a hole in it. Under the circumstances, I am justified in supposing that they were sent. Now, if Edinburgh had formulated her opinions on this subject and forwarded them to the proper authorities, as I understand she did, nothing further would have been said. The chemists of Edinburgh are at liberty to form any opinions which may occur to them, and these opinions are worthy of all respect as coming from an influential body of men. If, however, they forwarded these opinions to the Lord Chancellor they were grossly out of order, and took upon themselves a most unwarranted responsibility; and if the Lord Chancellor received these suggestions at a critical period in the evolution of his ideas regarding pharmacy, the Edinburgh chemists may have inflicted a blow on pharmacy from which she cannot recover during the lifetime of any man whose name now appears on the register. I am quite certain that, if the terms of the Edinburgh suggestions were published, they would meet with a wave of indignation which would astonish the men who formulated them with so much calmness and self-confidence. I have said that these suggestions are worthy of consideration as coming from an important body of chemists; but if they have been sent to the Lord Chancellor it is not unlikely that they have met with a consideration far beyond their merits. He would take them as representing the opinions of all the Edinburgh men—which I do not believe to be the case—the pretentious style in which they are drawn up would impress him, and the course indicated would no doubt chime in with his own ideas as a shareholder in a drug-store.

If the arguments put forward by Mr. Glass in your issue of July 22 are the arguments of the Edinburgh men generally in favour of these suggestions, I blush for the intelligence of my countrymen. To begin with, it is stated that we cannot get a monopoly. I, personally, am sick of this monopoly-argument, and it is humiliating, after all that has been said upon it, that such ignorance should prevail in an important centre like Edinburgh. Nobody ever asked for a monopoly. We simply ask that the terms of the Pharmacy Act, 1888, be carried out. No Judge has ever said that the Pharmacy Act sets up a monopoly; no Judge has ever said that it is too conservative in nature. All that has ever been said is that it is not strong enough to deal with limited companies. We only ask that articles upon the poisons-schedules be confined to the shops of qualified men, and it was exactly for this purpose that the Pharmacy Act was passed.

Again, it is said that, if these suggestions were carried out, employers would be made responsible for the acts of unqualified assistants. Now, I would like to know, if the employer is the responsible party, how the public interests are to be safeguarded by the exhibition of a qualified man's name inside the shop? If the qualified man is not responsible for what is done inside the shop, what meaning is attached to the exhibition of his name? The employer ought to be responsible, of course. A qualified man in a drug-store is simply an employé, and no Act of Parliament ever

laid it down as a principle that a mere employé could be made responsible for the acts of an employer. The exhibition of the names of unqualified men outside a shop and of the name of a qualified man inside might serve to confuse the public; but such a system would afford no safeguard whatever.

It is further said that chemists would benefit by this system. If it is a benefit for a body of honourable educated men to be put in chains and handed over to the tender mercies of company-promoters, chemists would be benefited. Under this system it would become impossible to maintain the present high grade of education in the ranks of pharmacy, and as a result we would soon have an altogether inferior type of men registered as chemists. Wages would fall in place of rising, and as unqualified men would be placed on a footing with qualified men (which they are not at present), the personal element in the drug-business would be greatly depreciated.

You, Sir, have already dealt with the question of a double register. I have nothing to add beyond saying that this suggestion can only be properly characterised by a word which I do not care to apply to chemists. If chemists, however, will take into consideration the fact that it is suggested that unqualified men be endowed with practically the same privileges as qualified men on payment of 5*l.*, the missing word will not be difficult to find. In short, these Edinburgh suggestions are a mass of absurdities, based on the most utterly rudimentary and fallacious arguments. They are presented in a style pretentious far beyond their merits, having been conceived so far as intelligence goes in a Scotch mist, and brought forth in a London fog.

Dumfries, July 24.

JAMES REID.

Methylated Soap-liniment.

SIR,—You comment favourably in your "Review of the British Pharmacopœia" on the substitution of soft soap for hard soap in the preparation of soap-liniment. There is still one grave defect—viz., that the liniment is not standardised by dilution to a definite quantity. I suppose the pharmacist is in no great danger of prosecution on account of the indefinite character of soap-liniment. It is, however, a serious drawback that the soap varies at least 50 per cent. in some of the samples sold. I use soap-liniment to estimate hardness of water, strength of lime-water, &c.

Four c.c. of lime-water shaken up with 1 oz. of distilled water in a 3-oz. bottle should foam or form a permanent froth with 1 c.c. of soap-liniment of good quality, whereas it requires 2 c.c. of the present official liniment.

Suppose I wish to make a soap-solution to estimate the hardness of water so that 1 c.c. shall correspond to 1 milligramme of calcic carbonate per 100 000 (or 0.7 gr. per gall.), 1 c.c. of proper soap-liniment will bear dilution with distilled water to 12 c.c., whereas the ordinary samples of methylated soap will bear dilution only to 6 c.c. I think such a discrepancy quite unjustifiable, and the permission to use methylated spirit surely does not allow a deficiency of 50 per cent. soap.

I have found the use of liniment made with soft soap a splendid success for hardness of water, and standardising is not difficult; nevertheless, such trouble could easily be obviated by the use of a uniform preparation. A good soap-liniment froths in its own bottle permanently when shaken, even when we add 30-per-cent. spirit; none of these samples froth when shaken. Again, the deficiency of colour is in ratio to the deficiency of soap—colour is yellowish-brown, 0.2 and 0.3, when they should be colour 0.8, &c. Again, sp. gr. varies from 0.900 to 0.840.

I shall be glad if you will ventilate this subject, as my method is known to others for examining hardness of water, and as these data indicate a sample of water may be returned "Hardness 11°" or "Hardness 20°."

I am, Sir,

Yours faithfully,

J. BARBER SMITH.

4 Holmdere Avenue, S.E., July 24.

Scarcity of Qualified Assistants.

SIR,—Your leading article of a week ago upon this subject gave me no surprise. I have known this for some months, and have always asked a competent salary and never failed to get it. After years of study and expense a qualified

assistant is offered a bare pittance. What is the result? He leaves his profession and goes over to something else. Say a man takes a branch managership under the ordinary chemist; if returns increase he gets no extra salary or commission, has very little authority over the apprentices and assistants under him, and having none, and all the responsibility, he becomes disgusted and discontented. Before he engages he is asked if he is an abstainer, Churchman or Dissenter, and after being on his duties a week or two is given six or seven hours' night-duty gratis.

His cure is to go to the "stores," where he will get paid for work done; as business increases his salary will be raised; and as long as the directors know he is doing his duty they never interfere. What a contrast to the grumbling and growling of the everyday chemist! All qualified men should ask 2*l.* 10*s.* to 3*l.* a week, and should not go unless they get it. I can guarantee they will not be out of a situation long. Are you aware most of the college men now keep a book of situations "not to be taken"? Now is the time to strike for higher wages.

VERB. SAP. (73/74)

Formalin in Food.

SIR,—Regarding the paragraph on page 76 of your issue of July 15 as to the effect of formalin on digestion, we would remark that all the facts, so far as they are known, show that the digestion of food preserved by formalin is not slower than that of food to which no formalin has been added. We refer you to the work of Drs. Rideal and Foulerton on this subject which appeared in *Public Health* for May. It is also noteworthy that gelatinous substances hardened by formalin cannot be re-melted by boiling, but when brought into direct contact with body warmth the formalin is absorbed by the skin, and the gelatin remaining can be easily melted again—in fact, it is quite pasty after all the formalin is absorbed. If this is the case by contact with the outside of the body, how much more in the presence of the higher degree of warmth in the stomach? This is the explanation derived from Rideal and Foulerton's observations.

Yours truly,

St. Mary-at-Hill, July 18. AUGUST ZIMMERMANN.

Legal Queries.

We do not give legal opinions by post. Information regarding most legal matters in connection with pharmacy will be found in THE CHEMISTS' AND DRUGGISTS' DIARY, and in "Pharmacy and Poison Laws of the United Kingdom," and Alpe's "Handy-book of Medicine-stamp Duty."

17/10. *Sub.*—Before taking so rash a step as to break the agreement with your landlord you had better endeavour to get the nuisance complained of abated. You cannot do this without a legal process, and it would certainly be unwise to act without the advice of a local solicitor.

70/47. *Lex.*—(1) Your statement is not at all clear, as you do not inform us when your tenancy will terminate. We presume, however, that the agreement between you and your landlord will expire in December, and that after that date he wishes to obtain a higher rent from you, and has given you notice to that effect. Of course you must within a reasonable time intimate to him whether you agree or not to his proposal, as a new agreement must be entered upon if you are to stay on. (2) The average population required to support a chemist in a working-class neighbourhood is, we should think, about 2,500.

74/23. *H. & M.*—"Magnesia" is magnesias levis, B.P. It is the custom in some parts of the country to give light carbonate of magnesias when "magnesias" is asked for, and it may be possible in such places to get together evidence to prove that the carbonate is not sold to the prejudice of the purchaser, or even that it is the article required; but that does not alter the fact that "carbonate of magnesias" is not generally given for "magnesias." We do not recall any cases, except Gregory's powder, in which a fine has followed the use of carbonate for calcined magnesias.

Miscellaneous Inquiries.

We reply to subscribers and their employes only upon subjects of interest to other readers generally. When more than one query is sent write each on a separate piece of paper. When a sample accompanies a query full particulars regarding the origin and use of the sample must be given, and it must be distinctly labelled. Queries are not replied to by post, and those sent anonymously are disregarded.

60/31. *Vanilla.*—The sample you send is a specimen of Seychelles vanilla; the white crystals on the surface are vanillin, and known in the trade as "frosted" or crystallised. To rub off this delicate coating before using is almost akin to taking "the gilt off the gingerbread," and it should not be removed—in fact, the more vanillin on the bean the better the essence. Well-crystallised pods always realise a higher figure in Mincing Lane than ordinary brown pods.

73 16. *Creol.*—Corrosive sublimate will be quite compatible with an aqueous solution containing carbolic acid or cresols. The latter will float on the surface, and the corrosive sublimate will remain dissolved in the water. But if you add corrosive sublimate to soluble sanitary fluids red oxide of mercury will be precipitated. We shall report on the sample of seed later on.

73/18. *T. E. F.*—There are two good formulæ for Brown Gun-barrel Stain in "Pharmaceutical Formulas," page 402.

70/59. *Southport.*—You will find some good forms of sterilisers advertised in our advertisement columns.

67 48. *Hepatic*—Dr. Lauder Brunton, Dr. J. W. Burnet, and Dr. Mortimer Granville are amongst the specialists to whom you may apply for advice in regard to the liver. You will find their addresses in our DIARY.

24/37. *A. H.*—The new Minor fee will be imposed after August, 1900. The second and subsequent fees will be 3*l.* 3*s.*

[Many more queries will be replied to next week]

Information Wanted.

The Editor will be obliged for replies to the following from any who can furnish the information.

1/25. Who are the makers of Trench's remedy for epilepsy?

68/60. Vesuvian pumice shaped like shells: where obtainable?

70/9. Addresses of best firms to supply ground pumice-stone in ton-lots.

73/86. Composition of Horner's neuralgic tablets, an American remedy.

65/60. Where can $\frac{1}{2}$ -oz. and 1-oz. extract-jars be obtained? Makers preferred.

69/5. Cheap round sauce-bottles with glass stoppers (about 20 oz.): where obtainable?

69/74. Where can machines be obtained for making paper bags of all sizes for grocers, chemists, &c.

29/76. Where can food like Mellin's be obtained in bulk, also malt-extract in powder, and condensed milk in powder?

72/40. Makers of photographic mounts; trade-mark, lion rampant, with shield and spear in front paws, and two tails; monogram, C. E. & Co. at each side. They are German make.

Labels on Tins—Perhaps the gentleman who suggests using liq. sodii silicatis for sticking labels on tins will say whether he uses the thick syrupy solution, supplied by the wholesale houses as sodii silicas. solution conc. at 3*d.* per lb.? I have been giving some of the latter a trial to-day, but find it discolours the labels in patches.

July 24.

A. H. BENSON.

A Number of Novelties,

Some Business Paragraphs and Trade Notes.

CARNOS.

This is an extract prepared by Carnos (Limited), Great Grimsby. It is a preparation resembling liquid extract of meat, has no sediment, and may be taken either hot or mixed with aerated beverages to form a highly nutritious drink. Invalid extract is put up in 2-oz. bottles to retail at 1s. each. The ordinary form of Carnos is put up in 1-oz. to 16-oz. bottles, and there is also a 2-oz. pocket-flask for cyclists, with screw-top and cup, to sell at 1s. 6d. each.

I. AND I. FOOD.

The Infant and Invalid Food Company (Limited), 54 City Road, E.C., have introduced a new food in which the constituents are presented in a form ready for assimilation. It is an impalpable powder containing 35 per cent. of fatty matter, 50 per cent. of albuminoids, and 72 per cent. of digestible carbohydrates. It is prepared from cereals, and is a good food both for infants and mothers. It is put up in 6d. packets and in 1s. to 4s. tins.

EIFFEL TOWER LEMONADE.

The remarkable success which has attended the introduction by Messrs. G. Foster, Clark & Co., Maidstone, of this article is a striking testimony to the fact that during the hot weather the British public truly love temperance drinks. This lemonade is, of course, only one of a series of pleasant compounds that the firm manufacture, and from our own observation we find that they are all pure products put-up in good style, so that chemists may stock them with credit to themselves.

KING'S MALTED FOOD.

Messrs. George King & Co., Albion Food-mills, Old Street, E.C., are the manufacturers of malted cooked food for nursery use. They sell it in bulk only, so that chemists may put it up in any way they like, and both wholesalers and retailers will be glad to know that it is a good article. They can obtain quotations by applying to the above address. Messrs. King & Co. are the proprietors of three other foods—namely, King's wheaten food (malted), King's patent cooked oatmeal, and Lloyd's universal food.

WARNER'S TABLETS.

Messrs. W. R. Warner & Co., of Philadelphia, have recently added to their list chocolate-coated nervitone tablets, the composition of which is as follows:—Phosphorus $\frac{1}{100}$ gr., ferri carb. $1\frac{1}{2}$ gr., asafoetida $\frac{1}{2}$ gr., ext. sumbul $\frac{1}{2}$ gr., ext. nuc. vom. $\frac{1}{10}$ gr. They also make effervescent Carlsbad water "Lentiforms," one or two of which in a glass of water makes a pleasant saline aperient drink. These are put up in square screw-stoppered bottles with internal stopper, which effectually prevents deterioration of the tablets in any climate. Messrs. Newbery stock these goods.

NEW CATALOGUE.

Messrs. May, Roberts & Co.'s catalogue of druggists' sundries, &c., again comes to us from Clerkenwell Road, E.C., in a form which is pretty familiar to our readers. Some revision has been made in the matter and many new items included. We notice also that a dark-room has been fitted-up on the premises, and that it is at the service of their customers or their customers' clients. The system of free non-returnable packages which was adopted a year ago has been appreciated by the firm's customers, and is to be retained.

VALSOL.

Mr. W. Poppelreuter, 54 Portland Street, Manchester, sends us samples of pure liquid valsol. No. 1 is specially intended for making iodine-solutions. It dissolves iodine by simply shaking, and the solute does not precipitate. No. 3 is for solutions of creosote, guaiacol, and ichthyol. The object of introducing these plain valsols (of which there are four different kinds with different solvent-power) is to enable chemists to dispense prescriptions when medical men desire

special compounds. Valsol is an oxygenated vaseline oil of a brownish colour and slight ammoniacal odour.

BOTANIC BREWERS' GUIDE.

This is the title of a little manual, consisting of thirty-six pages of hints and formulae, which Messrs. Potter & Clarke, Artillery Lane, E., have published this past week. We have had a great many inquiries recently regarding a work of this nature telling the quantities of sugar, the temperature for fermentation, and other particulars which may enable the amateur brewer to keep within the Excise limits of alcohol for tax-free beverages; and in this little work of Messrs. Potter & Clarke's there is all that information and much more. The recipes are numerous, and are good on the whole. No price is attached to the book.

DELICIOUS "DYLISSIA."

In order to cope with the demand for their "Dylissia" preparations, Messrs. Durant & Co. have removed their offices from Mount Pleasant to Rosebery Avenue, London, E.C., to which address all communications should be sent. The premises in Mount Pleasant are still retained by them as warehouses and works. The firm send us a specimen of an exquisite showcard for "Dylissia" toilet-preparations. It is a monochrome picture of a pensive maiden who sits in a woodland shade; she is, we fancy, one who proposes to benefit her skin, complexion, and teeth by the use of "Dylissia." The showcard is handsomely mounted in a carved frame finished in cream and gold.

UP-TO-DATE SHOPFITTING.

Mr. Henry Squire, 107 High Street, Camden Town, a pushing North London chemist, has just had his pharmacy at that address fitted in a novel style by Messrs. J. & W. Bygrave, shopfitters, 111 Shepherdess Walk, City Road, N. This makes the fourth of Mr. Squire's shops fitted in a style somewhat similar to that which Messrs. Salmon & Gluckstein have popularised in the tobacco trade. The frontage is very imposing, is splendid for display, and attracts customers. Mr. Squire and Messrs. Bygrave have been careful to make the interior as convenient for working as it is charming in appearance, everything being of the best quality and finish.

METROPOLITAN COLLEGE.

Mr. W. Watson Will, principal of the Metropolitan College of Pharmacy, 162 Kennington Park Road, S.E., announces that he has doubled his present school accommodation, having secured the adjoining premises. A new laboratory and classroom are in course of erection, which will be fitted with up-to-date appliances. When completed the buildings will consist of a classroom, two chemical laboratories, two histological laboratories, two museums, pharmaceutical laboratory, dispensary, balance-room, physical laboratory, &c. Mr. Will reports that the increased number of students applying for admission has greatly aided and encouraged him in extending his premises.

LIQUORICE FROM AMERICA.

Messrs. Young & Smylie, manufacturers of liquorice specialties in Brooklyn, N.Y., call the attention of druggists in the British Empire to their products. The United States enjoys peculiar advantages in regard to liquorice production, as the consumption of the black juice there is, per head of population, much higher than in any other country. Messrs. Young & Smylie make their liquorice in sticks—packed in large boxes with bay-leaves, in neat 5-lb. boxes, and in fancy paper boxes for counter-display. They have also liquorice pellets in tin boxes glazed in the front, in small packages to retail at 3d. each, and their compound liquorice-preparations include "tar, liquorice, and tolu wafers" in 5-lb. tins, and various kinds of liquorice-lozenges. Those who are on the look-out for things distinctly novel would do well to communicate with the firm.

AN EXPORT-LIST.

Our colonial subscribers who have not yet received Messrs. Baiss Brothers & Stevenson's export-list should send to headquarters, Jewry Street, E.C., for a copy of it. The list begins with an address to buyers, and the conditions upon which the firm supplies the goods to those abroad. These, we observe, include free packages and free carriage to any port in the world, thus putting the most distant customer in a position as good, in regard to choice and price, as if he resided in London. We believe the large experience of the firm enables them to offer special rates, upon which they tell us they will not be beaten. The list is devoted to druggeries, English tinctures and spirits, various special pharmaceutical preparations, and a complete list of druggists' ordinary goods, in addition to which there are coated pills, perfumes, cachous, lozenges, counter-specialities, and druggists' sundries.

CATALOGUE AND TEXT-BOOK.

Messrs. F. Newbery & Son send us a copy of their new catalogue of druggists' sundries, medicines, perfumery, mineral waters, &c., which makes the nineteenth annual issue. As usual, the catalogue contains a great deal of information beyond the actual price-lists. For example, it is stated that in the Proprietary-goods Section 598 entries have been removed, 273 new items entered, and 590 quotations modified—this sounds like a pharmaceutical registrar-general's report on deaths, births, and marriages. In the list of wines one sees whether they require an Excise licence or not, and in the proprietary-list the protected articles are all indicated. In what we may regard as the Legal Section of the catalogue there are some new points, and emphasis is placed on the fact that giving away medicines and selling directions for the same constitute a sale of the medicine. The catalogue is copiously illustrated, and a copy will be sent to chemists on application.

TITLE OBVIOUS.

Mr. Charles Thompson, pharmaceutical chemist, Sparkbrook, Birmingham, is known to the trade as a man with original ideas regarding gas-heating, and he has recently applied these to the production of a most useful bedroom extra consisting of a special burner, which screws into an ordinary gas-bracket, for heating water or milk. The burner is in one piece, with a short bracket which has a rising and falling support for kettle or pannikin. Mr. Thompson supplies this burner with a kettle or pannikin, in a box, to retail at 2s. 6d., or with both kettle and pannikin at 3s. 3d. The device is exceedingly well made from polished nickel, and the kettle and pannikin have recessed bottoms which fit within the support-ring, thus preventing slipping. Mr. Thompson also points out that the support takes an evaporating-dish comfortably.

VASOGEN-COMPOUNDS.

Mr. E. J. Reid, 11 Dunedin House, Basinghall Street, E.C., has sent us a series of Vasogen-preparations which are now being considerably prescribed by leading medical practitioners. Vasogens have an oleaceous basis, which has been found to be not only an admirable solvent for many active medicinal remedies, but which promotes their absorption by the skin. This is particularly exemplified in the case of iodine, mercurial ointment, creosote and its derivatives, and ichthyol, and it is specially observed that in many skin-diseases of a refractory nature the Vasogens are more efficacious than ordinary ointments because they penetrate to the lower dermis, which is often the seat of the disease. Mr. Reid will send full particulars of these products to any inquiring chemists, and he has any amount of literature, principally of German origin, reporting upon cases which have been treated with the preparations. In addition to the liquid Vasogen-compounds Mr. Reid offers a Vasogen

ointment-base, a mercury Vasogen-ointment, and Vasogen-capsules containing stated amounts of creosote or iodine. These are specially intended for definite dermic medication.

THE SPIDER FLY-TAPE.

Mr. J. A. Moore, chemist, Grimsby, as will be seen from our advertisement pages, is putting upon the market a new automatic fly-catcher which he describes as the "Spider brand." The catcher is composed of a cardboard reel, large enough to prevent soiling of the fingers when manipulating it. This reel is fitted with red tape on which the sticky substance is placed, the latter being of sufficiently attractive odour to the nasal organs of the present abundant fly to result in the downfall of all unwary ones who bring only a small part of their anatomy into contact with their all-clinging though inert enemy. By simply hanging the reel by the loop of tape on a convenient nail or support it unrolls itself, disclosing to view the death-dealing "Spider," one yard in length, with a much larger catching-surface than if the medium were string. This result is abundantly proved by the photographs which Mr. Moore sends us of tapes after they had been hanging one hour. These tapes are invisible because of the swarms of flies which cover them.

SUMMER SPECIALITIES.

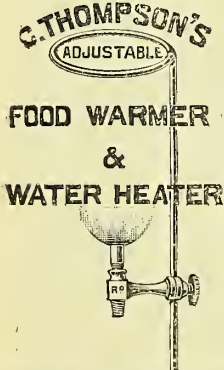
Messrs. Lorimer & Co., of Britannia Row, N., tell us that they are exceedingly busy just now in the production of summer specialities, on some of which there is an exceptional run. For example, their rennet-powder is put up in 6d. bottles with a little measuring-spoon attached, a dozen of which are packed in a box with as many free samples, and chromo-lithographic handbills, as well as a small window-poster. The bottle contains sufficient for curdling 10 gals. of milk. In this form rennet keeps everlastingly, and is a safe article to stock. A new Lorimer line is Eglantine Balm, an ideal toilet-cream, because it is free from grease, and is a translucent, emollient, soft jelly. The firm can put it up with any name or style of label which the retailer desires. In addition to the above title we observe that "Manicola" has been adopted by one of Messrs. Lorimer's customers. Extract of malt in 1s. bottle, the same size as is sometimes sold at 2s. 6d., and enclosed in an elegant carton, is worth looking after. The extract is of high diastasic power, and the firm put it up with the retailer's name and address on the labels. Magnesia milk is also made by them; it is a preparation containing saccharised hydrate of magnesia, and is a very effective calmative and corrective for children.

EDGAR'S CROUP-LOTION.

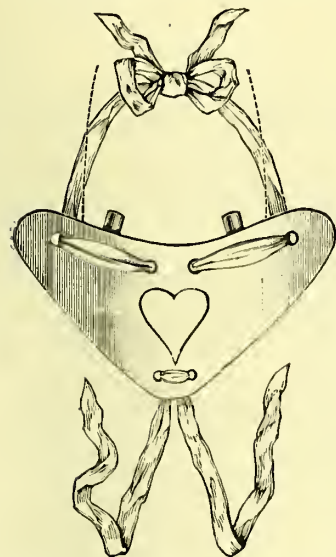
This preparation is one of the few examples there are amongst proprietary medicines of what may be called exogenic growth. Although Mr. James Edgar, M.R.C.V.S., introduced the preparation in 1825, after it had been used privately for some years by his father, it grew in popularity and in sales without any advertising to speak of—a few pounds a year covering all that was done—and its growth was really due to users of the preparation recommending it to their friends. What the sales would have been had the proprietors advertised more extensively it would be difficult to calculate, for the testimonials which they have been receiving during the past sixty years are sincere expressions of gratitude. Now that a private company (Edgar's Croup-lotion, Limited, Dartford, Kent) has been formed the directors have determined to exploit the preparation thoroughly, and, as a preliminary, they have added the lotion to the P.A.T.A. list, and have produced a 13½d. size as well as put the lotion up in handsome cartons, of which a facsimile is given in the inset this week. The lotion is applied to the throat upon a piece of linen, and it appears to give prompt relief in other throat-affections besides croup. It enjoys a good reputation in various parts of the world—in Russia, Germany, India, and all the British colonies—and the new style of packing excellently adapts it for exportation.

"ST. PAUL'S" SPECIALITIES.

Messrs. F. Newbery & Son, King Edward Street, Newgate Street, E.C., bring under our notice several things which they have recently added to their stock. The first is called the "Acme" arm-shield, and is intended for protecting the arm after vaccination. It consists of a thin slice of polished



celluloid, with a heart-shaped orifice cut in the centre, and perfectly flexible. About a quarter of an inch from the sides of the heart, on the under-side, are placed four celluloid supports $\frac{1}{2}$ inch long, which convert

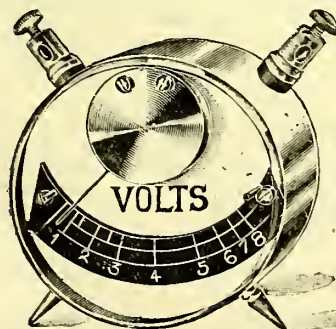


the shield into a small table for putting on the arm, this giving complete protection to the vaccination-pustules. The shape of the shield is shown in the accompanying engraving, and we need only add that it is tied round the arm by means of the silk tapes inserted in the celluloid. A great advantage of this shield is that it can be washed thoroughly. Several new kinds of "St. Paul's" perfumes are introduced by the firm, amongst them "Happy Omens," "Wedding Bells," "Wedding Ring," and "Horse-shoe." These perfumes are put up in quite elegant style, and the labels are exceedingly artistic and effective. The perfumes them-

selves are good old favourites, such as wood violets, white rose, and frangipani, as well as the more modern—*e.g.*, artificial violets—each being distinguished by the particular brand and the name of the perfume. The catchy titles and pretty labels will induce business, while the perfumes please the customers, who may select a new style and a favourite bouquet. These are put up in bottles to retail at 1s., and with a sprinkler-top, also in enamelled-card cases (2 oz. Lundborg flats), with St. Paul's dome stopper—an acceptable present—to retail at 2s. 6d. Another novelty is the "Effective" menthol-inhaler, which is a small tube of crystallised menthol with perforated gauze-covered cork and capillary orifice at the smaller end of the tube. This inhaler is enclosed in a nickel-silver case for carrying in the vest-pocket, and is a good thing to push at any time, as a few whiffs from it clear the throat and nose quickly, and strengthen the voices of singers. It retails at 3d. or 9d., but there is no reason why smart chemists should not get 1s. for it; and if Messrs. Newbery would but cover the cork with a perforated celluloid top, they would convert it into a fine shilling article, and add elegance to the finish. "Niagara" health-salt in illuminated tins, to sell at 4d., is a good line for this weather.

NEW LIGHTS.

Messrs. F. Darton & Co., of St. John Street, Clerkenwell, have shown us a pretty electric cycle-lamp which they have just brought out. It has an accumulator of two cells, about the size of a cigar-case, which is fitted on the handle-bar, and attached to this by wires is a tiny bull's-eye lantern. The cell is equal to four volts, and lasts for nine hours. Messrs. Darton's price for it is 14s., and we think that many chemist cyclists would like to have one of these for their own use. Then their wheeling friends are sure to buy it. We have tested the voltage of the cell with a new volt-meter made by Messrs. Darton. Most instruments of this kind are expensive, but this new one costs only 7s. 6d., and is well constructed, and does its work accurately. The illustration which accompanies this note shows the style of it.



Messrs. Darton & Co., make ammeters of the same style. The firm have been appointed agents for a clever luminous lamp intended for smoke-rooms, billiard-rooms, and, in fact, any place where a light is wanted instantly without striking a match. The lamp consists of a bichromate cell, to which a benzoline-lamp is attached. When one wants a light a spiral screw upright is pressed down, whereby the plates of the cell are lowered into the bichromate solution, and at the same time the upright removes a little cap from the benzoline wick, and thus enables the electric spark produced by the cell to pass over the wick and provide a light.

SODA-FOUNTAINS FOR ENGLAND.

Mr. N. W. Stiles has come over from America to see why English retailers should not do a good thing with the soda-fountain. He has a clear idea that there is money in it. In London alone during this tropical weather the business should run into millions of dollars, he says, and all that is wanted to ensure it is to put up good soda-fountains. The Matthews Apparatus Company, of New York City, are his principals, and we know that they are leaders in this department, some of the fountains that they construct and fit up in the pharmacies of the United States being extraordinarily elegant affairs. Mr. Stiles believes—and we agree with him—that City men in these hot days do not want whiskies-and-sodas or insipid lemon-squash, but that they would gladly pay 3d. to 6d. for a long, cool, well-flavoured drink taken through two straws; but where can they get it? With an attractive soda-fountain, preferably a wall-erection, costing anything between 100l. and 400l., and forming a magnificent advertisement, the attraction would soon become known, and new trade would be created. Spiers & Pond have a trial one in their Marble Arch place, and there is a big fountain to be put up in a Piccadilly shop. Mr. E. Balshaw, chemist, 37 White Rock Street, Hastings, has put an elegant Matthews fountain in his newly-fitted pharmacy there, and appears to be doing a good thing with it. Any chemist who wishes to get full particulars, or to hear more of the advantages of the soda-fountain, should write to Mr. Stiles, at 58 G Hatton Garden, E.C.

Photographic Notes.

BY A PHARMACEUTICAL CAMERIST.

"XIT" CAMERAS.

MESSRS. SHEW & Co., Newman Street, Oxford Street, W. have still further extended the series of folding-cameras which they bring out under the name of "Xit." They have now put on the market a guinea "Xit," which has three double dark-slides (quarter-plate size), a finder, and lens, the latter fitted with rotating stops and rotating shutter. A four-guinea edition is another addition to the series. This camera is fitted with a R.R. lens, Bausch & Lomb shutter, and iris diaphragms, and has three dark-slides. It can also be fitted with a daylight cartridge



film-holder.

OZONE AND THE LATENT IMAGE.

MR. ANDREOLI, whose ozone-apparatus is familiar to readers of THE CHEMIST AND DRUGGIST, has been writing on this subject to the *Electrical Review*. Dr. Emerson Reynolds originally observed that ozone will completely obliterate the latent image on a photographic plate, and that a second image might be taken on the plate so treated. Mr. Andreoli has gone a step further, and asks why a plate fogged by light should not be restored to primitive condition by the action of ozone. He has been making experiments with some success. The matter is interesting from a scientific point of view, and has led to the suggestion that ozone might be used in the ventilation of plate-works. An atmosphere favourable to the reduction of slight fog would thus always be at hand, and ought to be a beneficial one in which to manufacture dry-plates.

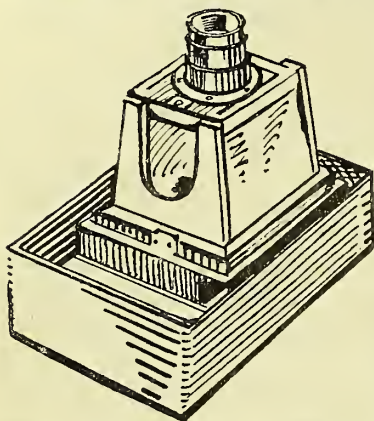
"AURA" PAPER.

I HAVE been trying the new self-toning paper which Messrs. G. Houghton & Sons, 88 and 89 High Holborn, W.C.,

are agents for. The paper is a printing-out collodion paper, and after printing has merely to be fixed in a weak hypo-bath (1 in 20). I find that very nice tones can be obtained on it by simply fixing as recommended, and on account of its tough surface it is a good paper to use during the hot weather when the soft-surfaced gelatin papers are often difficult to manipulate. The paper takes a good platinum tone if a suitable toning-bath is used, but its chief recommendation lies in the abolition of a toning-bath for obtaining the ordinary effects the photographer wants. The "Aura" paper is put up in packets and tubes, a packet of twelve quarter-plate pieces selling at 1s.

DEVELOPING WITHOUT A DARK-ROOM.

A FRENCHMAN has invented a camera, which he calls the "Héméscope," for developing and fixing negatives without



removing them from the camera. I read a popular description of it in *Le Journal*, which does not, however, enter into details as to the material of which it is constructed; but I presume from the description that the back portion of the camera is made of material which is not acted upon by the alkaline developer. The plate is exposed in the ordinary manner, but the plate-

holder is so constructed that after exposure the back may be withdrawn like a shutter, and red glass takes its place. On reversion of the camera into a developing-dish of red glass or porcelain the plate drops down, and the pressure of the liquid forces it to run over the plate instantaneously by passing through openings in the holder, through which the light cannot penetrate. The Héméscope is then dipped in cold water to wash the plate, and then into the fixing solution.

DARK-ROOM.

Llandudno.—Mr. L. A. Cocker, 68 Mostyn Street.

Practical Notes and Formulæ.

DECOLORISED TINCTURE OF IODINE.

SIEKER some time ago found that this tincture, made according to the National Formulary, contained its iodine in the form of sodium and ammonium iodide. It had present also some free ammonia and sulphur compounds, the latter imparting a disagreeable odour to the preparation. The following is a formula suggested for a quick process of manufacture:—

Sodium iodide	...	...	48.9 grammes
Ammonium iodide	...	...	47.3 grammes
Liquid ammonia	...	...	10 c.c.
Distilled water	...	...	155 c.c.
Rectified spirit to make	...	...	1,000 c.c.

It is necessary that the spirit be up to the standard of the B.P., or decoloration ensues on mixing with the ammonia.

TEETHING-SYRUP.

Citric acid	...	...	8 gr.
Distilled water	...	...	10 minims
Cocaine hydrochloride	...	...	1 gr.
Simple syrup	...	...	2 dr.
Syrup of saffron	...	...	2 dr.
Essence of vanilla	...	...	12 drops

Mix.

To be rubbed on the gums of young infants when teething.—*L'Union Pharmaceutique*.

AN ANTISEPTIC SOLUTION (GREEN CHLORAL).

Corrosive sublimate	...	...	1 gramme
Chlorate of sodium	...	...	1 gramme
Hydrochloric acid	...	...	1 gramme
Sulphate of copper	...	...	4 grammes
Water	...	...	1 litre

Make a solution.

SOME PILL-EXCIPIENTS.

THE following are some of the pill-exciipients recommended in a recent paper by M. C. Van Raes in the *Revue des Flandres*:—

Carbolic Acid.—(1) Soap, marshmallow, and simple syrup. (2) Glycerin and powdered marshmallow. (3) Flour, powdered soap, and powdered liquorice. (4) Powdered soap, tragacanth, and glycerin.

Aloes.—When associated with other gum-resins, soap and powdered liquorice. (2) Mass in a hot mortar, adding a few drops of water or a little mucilage.

Acetate of Potassium.—Canada balsam, or 3 parts of soluble cream of tartar and 1 part of water, to 18 parts of acetate of potassium.

Bromide or Iodide of Potassium.—(1) Powdered marshmallow and honey. (2) Iodide of potassium, 20 centigrammes; starch, 5 centigrammes; dextrin, 2 centigrammes; and simple syrup, q.s. (3) Iodide of potassium, 4.5 grammes; cacao-powder, 1.5 gramme; vaselin, q.s. (4) Dissolve the iodide of potassium in a small quantity of water, add gum arabic to make mucilage, and enough white clay to form a pill-mass. (5) Iodide of potassium, 2 grammes; cacao-powder, 1 gramme; medicinal soap, 1.3 gramme; vaseline, q.s.

Balsam of Copaiba.—(1) Mass with copaiba-resin. (2) Mix 10 parts of balsam and 2 parts of glycerin, and add 10 parts of powdered sugar, 10 of calcined magnesia, and 8 of powdered liquorice. (3) Mix 1 to 3 drops of water with each gramme of balsam, and add calcined or carbonate of magnesia to make a mass. (4) Balsam of copaiba, 10 parts; glycerin, 2 parts; powdered sugar, 10 parts; calcined magnesia, 10 parts; powdered liquorice, 8 parts.

Guaiacol, Eucalyptol, or Creosote.—(1) Powdered liquorice and a few drops of glycerin. (2) A pill containing 10 centigrammes of creosote and 2 centigrammes of extract of opium is best made by powdering the extract and mixing with double the quantity of flour, then adding the creosote and a few drops of glycerin. (3) Creosote, 10 parts; glycerin, 1 part; extract of liquorice, 10 parts; powdered liquorice, 10 parts. (4) Triturate with soap, and add powdered liquorice and extract of gentian q.s. (5) Mix the creosote with an equal quantity of water, and add enough powdered liquorice to make a pill-mass. (6) Animal charcoal sufficient to absorb the liquid, and Venice turpentine to make the mass adhere. (7) Two grammes of glycerin to 10 grammes of creosote, and enough powdered liquorice to make a mass.

Tar.—(1) Mix with the same weight of powdered animal and add a sufficiency of magnesia. (2) Powdered lycopodium.

Hydrastinine Hydrochloride.—(1) Sugar, tragacanth, and simple syrup. (2) Glycerin and powdered tragacanth.

Mercurial Ointment.—(1) Powdered marshmallow. (2) Phosphate of lime and soap q.s. (3) Mercurial ointment, 4 to 5 parts; powdered liquorice, 5 parts; glycerin, 5 drops; mucilage, q.s. For six pills. (4) Mix with the mercurial ointment twice the quantity of sugar of milk.

Pernanganate of Potassium.—(1) White bole and water q.s. (2) Mix with kaolin and mass with lanoline. Roll in talc-powder.

Phosphorus.—(1) In the case of phosphorised oil, use powdered liquorice and cacao-butter. (2) Anhydrous lanoline, 4 grammes; phosphorus, 6 centigrammes; powdered marshmallow, q.s. for 120 pills. Dissolve the phosphorus in the melted lanoline and add enough powdered marshmallow to make a mass. (3) Dissolve, at a low temperature, in cacao-butter. (4) Equal parts of phosphorus, water, and flour.

Phosphide of Zinc.—Liquorice-powder and mucilage or extract of malt.

Terpine.—Use 2 centigrammes of powdered tragacanth and simple syrup q.s. for each gramme of terpene.

Santal Oil.—Oil, 5 grammes; gum berzoin, 5 grammes; animal charcoal, q.s. for forty pills.